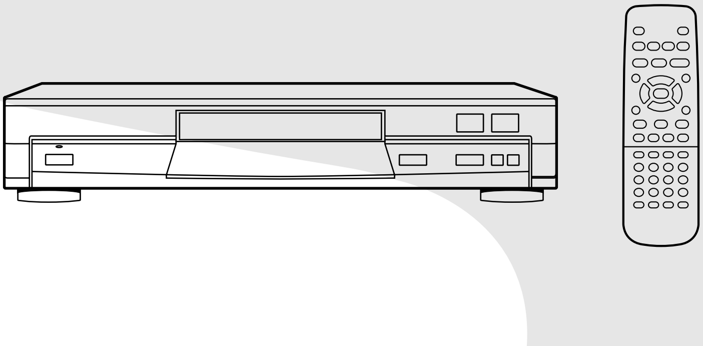
TOSHIBA

FILE NO. 810-200103

SERVICE MANUAL

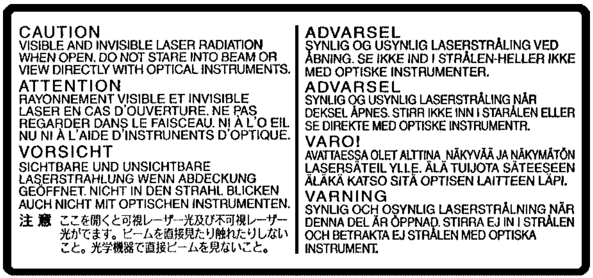
DVD VIDEO PLAYER

SD-210EB
SD-210EE
SD-210EL



Jun., 2001 Ⓢ

LASER BEAM CAUTION LABEL



CAUTION
VISIBLE AND INVISIBLE LASER RADIATION
WHEN OPEN. DO NOT STARE INTO BEAM OR
VIEW DIRECTLY WITH OPTICAL INSTRUMENTS.

ATTENTION
RAYONNEMENT VISIBLE ET INVISIBLE
LASER EN CAS D'OUVERTURE. NE PAS
REGARDER DANS LE FAISCEAU. NI À L'O EIL
NU NI À L'AIDE D'INSTRUNENTS D'OPTIQUE.

VORSICHT
SICHTBARE UND UNSICHTBARE
LASERSTRAHLUNG WENN ABDECKUNG
GEÖFFNET. NICHT IN DEN STRAHL BLICKEN
AUCH NICHT MIT OPTISCHEN INSTRUMENTEN.

注 意 ここを開くと可視レーザー光及び不可視レーザー
光がでます。ビームを直接見たり触れたりしない
こと。光学機器で直接ビームを見ないこと。

ADVARSEL
SYNLIG OG USYNLIG LASERSTRÅLING VED
ÅBNING. SE IKKE IND I STRÅLEN-HELLER IKKE
MED OPTISKE INSTRUMENTER.

ADVARSEL
SYNLIG OG USYNLIG LASERSTRÅLING NÅR
DEKSEL ÅPNES. STIRR IKKE INN I STARÅLEN ELLER
SE DIREKTE MED OPTISKE INSTRUMENTR.

VARO!
AVATTAESSA OLET ALTTINA NÄKYVÄÄ JA NÄKYMÄTÖN
LASERSÄTEIL YLLE. ÄLÄ TUIJOTA SÄTEESEEN
ÄLÄKÄ KATSO SITÄ OPTISEN LAITTEEN LÄPI.

VARNING
SYNLIG OCH OSYNLIG LASERSTRÅLNING NÄR
DENNA DEL ÄR ÖPPNAD. STIRRA EJ IN I STRÅLEN
OCH BETRAKTA EJ STRÅLEN MED OPTISKA
INSTRUMENT.

98764189

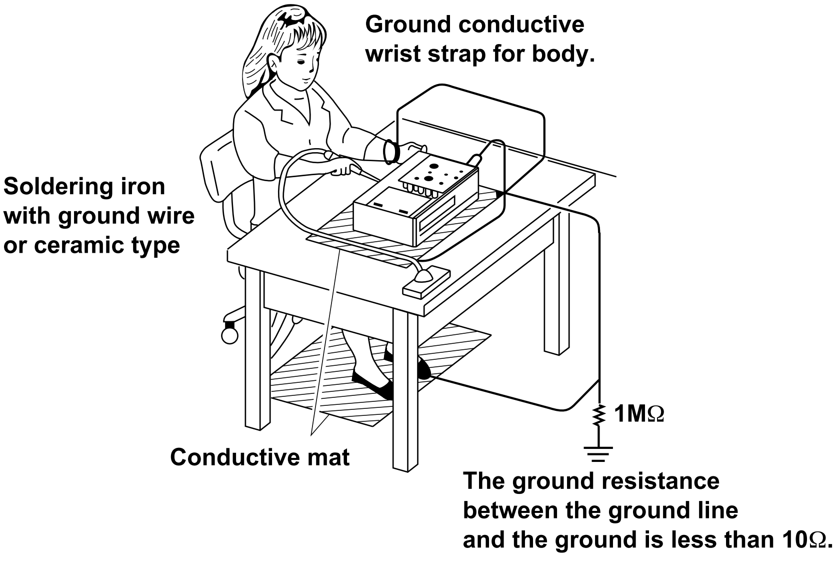
When the power supply is being turned on, you may not remove this laser cautions label. If it removes, radiation of a laser may be recceived.

PREPARATION OF SERVICING

Pickup Head consists of a laser diode that is very susceptible to external static electricity.

Although it operates properly after replacement, if it was subject to electrostatic discharge during replacement, its life might be shortened. When replacing, use a conductive mat, soldering iron with ground wire, etc. to protect the laser diode from damage by static electricity.

And also, the LSI and IC are same as above.


Ground conductive
wrist strap for body.
Soldering iron
with ground wire
or ceramic type
1MΩ
Conductive mat
The ground resistance
between the ground line
and the ground is less than 10Ω.

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   1. Integrated Circuit (IC)
   2. Capacitor (Cap)
   3. Resistor (Res)
4. EXPLODED VIEWS
   4-1. Packing Assembly
   4-2. Chassis Assembly
   4-3. Mechanism Assembly
5. PARTS LIST

SECTION 1
GENERAL DESCRIPTIONS

1. OPERATING INSTRUCTIONS (SD-210EB)

SAFETY PRECAUTIONS

WARNING: **TO REDUCE THE RISK OF FIRE OR ELECTRIC SHOCK, DO NOT EXPOSE THIS APPLIANCE TO RAIN OR MOISTURE. DANGEROUS HIGH VOLTAGES ARE PRESENT INSIDE THE ENCLOSURE. DO NOT OPEN THE CABINET. REFER SERVICING TO QUALIFIED PERSONNEL ONLY.**

CAUTION: This Digital Video Disc Player employs a Laser System.
To ensure proper use of this product, please read this owner’s manual carefully and retain for future reference. Should the unit require maintenance, contact an authorized service location - see service procedure.

Use of controls or adjustments or performance of procedures other than those specified herein may result in hazardous radiation exposure.

To prevent direct exposure to laser beam, do not try to open the enclosure.
Visible and invisible laser radiation when open and interlocks defeated.
DO NOT STARE INTO BEAM.

CLASS 1
LASER PRODUCT

In the spaces provided below, record the Model and Serial No. located on the rear panel of your DVD video player.

Model No. ______________________________ Serial No. ______________________________

Retain this information for future reference.

The following information applies only to SD-210EB, the model for U.K.

General Information

If the socket outlets in your home are not suitable for the plug supplied with this unit, the plug must be cut off and an appropriate one fitted.

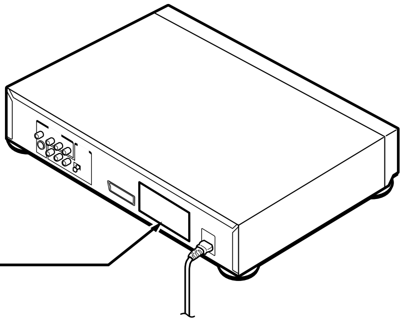
The plug severed from this mains lead must be destroyed as it is hazardous if inserted into a live socket.

IMPORTANT
The wires in this mains lead are coloured in accordance with the following code:
BLUE: NEUTRAL
BROWN: LIVE
As the colours of the wires in the mains lead of this unit may not correspond with the coloured markings identifying the terminals in your plug, proceed as follows:
The wire that is coloured blue must be connected to the terminal in the plug which is marked with the letter N or coloured black.
The wire that is coloured brown must be connected to the terminal which is marked with the letter L or coloured red.

Do not connect either wire to the earth terminal which is marked by the letter E or by the safety earth symbol ⏚ or coloured green or green-and-yellow.

Use a 5A fuse which is approved by ASTA or BSI to BS1362.
Always replace the fuse cover after changing the fuse.

Location of the required label



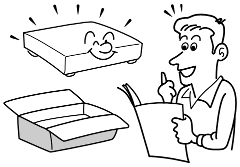
The rating plate and the safety caution are on the rear of the unit.

IMPORTANT SAFETY INSTRUCTIONS

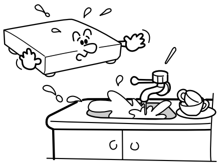
CAUTION: PLEASE READ AND OBSERVE ALL WARNINGS AND INSTRUCTIONS GIVEN IN THIS OWNER'S MANUAL AND THOSE MARKED ON THE UNIT. RETAIN THIS BOOKLET FOR FUTURE REFERENCE.

This set has been designed and manufactured to assure personal safety. Improper use can result in electric shock or fire hazard. The safeguards incorporated in this unit will protect you if you observe the following procedures for installation, use and servicing. This unit is fully transistorized and does not contain any parts that can be repaired by the user.
DO NOT REMOVE THE CABINET COVER, OR YOU MAY BE EXPOSED TO DANGEROUS VOLTAGE. REFER SERVICING TO QUALIFIED SERVICE PERSONNEL ONLY.

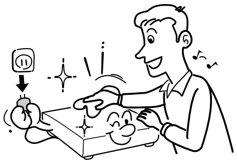
1. Read these instructions.



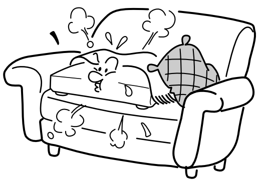
2. Keep these instructions.
3. Heed all warnings.
4. Follow all instructions.
5. Do not use this apparatus near water.



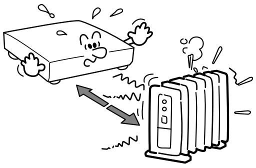
6. Clean only with dry cloth.



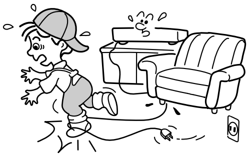
7. Do not block any ventilation openings. Install in accordance with the manufacturer’s instructions.



8. Do not install near any heat sources such as radiators, heat registers, stoves, or other apparatus (including amplifiers) that produce heat.

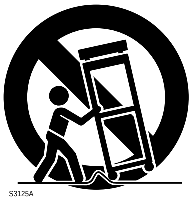


9. Protect the power cord from being walked on or pinched particularly at plugs, convenience receptacles, and the point where they exit from the apparatus.

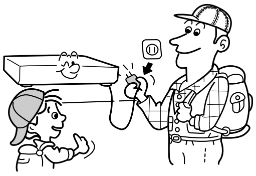


10. Only use attachments/accessories specified by the manufacturer.

11. Use only with the cart, stand, tripod, bracket, or table specified by the manufacturer, or sold with the apparatus. When a cart is used, use caution when moving the cart/apparatus combination to avoid injury from tip-over.

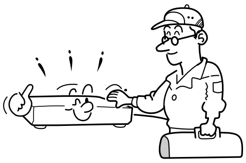


12. Unplug this apparatus during lightning storms or when unused for long periods of time.



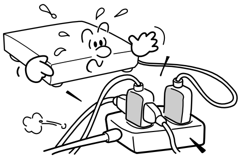
IMPORTANT SAFETY INSTRUCTIONS

13. Refer all servicing to qualified service personnel. Servicing is required when the apparatus has been damaged in any way, such as power-supply cord or plug is damaged, liquid has been spilled or objects have fallen into the apparatus, the apparatus has been exposed to rain or moisture, does not operate normally, or has been dropped.

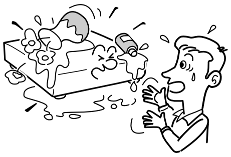


14. When you use headphones, keep the volume at a moderate level. If you use the headphones continuously with high volume sound, it may cause hearing damage.

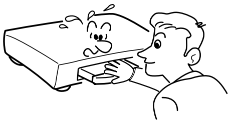
15. Do not overload wall outlets; extension cords, or integral convenience receptacles as this can result in a risk of fire or electric shock.



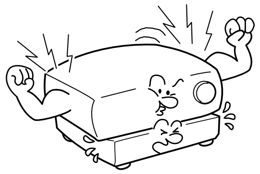
16. Never insert objects of any kind into this apparatus through openings as they may touch dangerous voltage points or short-out parts that could result in a fire or electric shock. Never spill liquid of any kind on the apparatus.



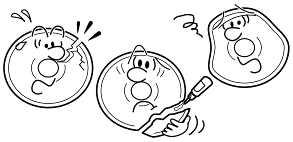
17. Keep your fingers well clear of the disc tray as it is closing. Neglecting to do so may cause serious personal injury.



18. Do not place a heavy object on or step on the apparatus. The object may fall, causing serious personal injury and serious damage to the apparatus.



19. Do not use a cracked, deformed, or repaired disc. These discs are easily broken and may cause serious personal injury and apparatus malfunction.



Precautions

Notes on handling

- When shipping the DVD video player, the original shipping carton and packing materials come in handy. For maximum protection, repack the unit as it was originally packed at the factory.
- Do not use volatile liquids, such as insect spray, near the DVD video player. Do not leave rubber or plastic products in contact with the DVD video player for a long time. They will leave marks on the finish.
- The top and rear panels of the DVD video player may become warm after a long period of use. This is not a malfunction.
- When the DVD video player is not in use, be sure to remove the disc and turn off the power.
- If you do not use the DVD video player for a long period, the unit may not function properly in the future. Turn on and use the DVD video player occasionally.

Notes on locating

- Place the DVD video player on a level surface. Do not use it on a shaky or unstable surface such as a wobbling table or inclined stand. The loaded disc may come off the proper position and cause damage to the DVD video player.
- When you place this DVD video player near a TV, radio, or VTR, the playback picture may become poor and the sound may be distorted. In this case, place the DVD video player away from the TV, radio, or VTR.

Notes on cleaning

Use a soft, dry cloth for cleaning.

- For stubborn dirt, soak the cloth in a weak detergent solution, wring well and wipe. Use a dry cloth to wipe it dry.
  Do not use any type of solvent, such as thinner and benzine, as they may damage the surface of the DVD video player.
- If you use a chemical saturated cloth to clean the unit, follow that product’s instructions.

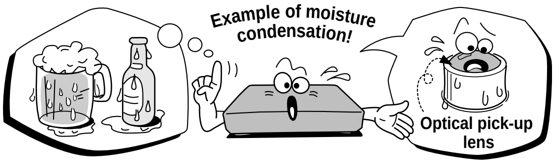
To obtain a clear picture

The DVD video player is a high technology, precision device. If the optical pick-up lens and disc drive parts are dirty or worn down, the picture quality becomes poor. To obtain a clear picture, we recommend regular inspection and maintenance (cleaning or parts replacement) every 1,000 hours of use depending on the operating environment. For details, contact your nearest dealer.

Notes on moisture condensation

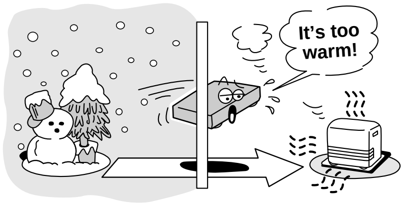
Moisture condensation damages the DVD video player. Please read the following carefully.

Moisture condensation occurs, for example, when you pour a cold drink into a glass on a warm day. Drops of water form on the outside of the glass. In the same way, moisture may condense on the optical pick-up lens inside this unit, one of the most crucial internal parts of the DVD video player.



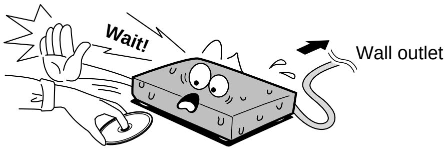
- **Moisture condensation occurs during the following cases.**

- When you bring the DVD video player directly from a cold place to a warm place.
- When you use the DVD video player in a room where you just turned on the heater, or a place where the cold wind from the air conditioner directly hits the unit.
- In summer, when you use the DVD video player in a hot and humid place just after you move the unit from an air conditioned room.
- When you use the DVD video player in a humid place.


It’s too warm!

- **Do not use the DVD video player when moisture condensation may occur.**

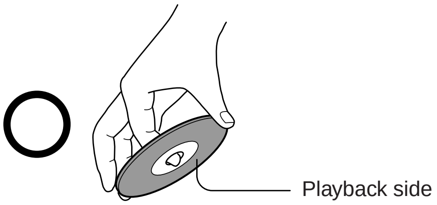
  If you use the DVD video player in such a situation, it may damage discs and internal parts. Remove the disc, connect the power cord of the DVD video player to the wall outlet, turn on the DVD video player, and leave it for two or three hours. After two or three hours, the DVD video player will have warmed up and evaporated any moisture. Keep the DVD video player connected to the wall outlet and moisture condensation will seldom occur.



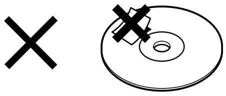
Notes on Discs

On handling discs

- Do not touch the playback side of the disc.

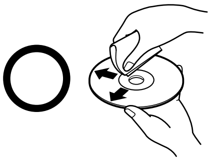


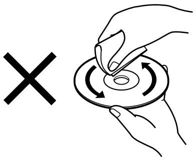
- Do not attach paper or tape to discs.



On cleaning discs

- Fingerprints and dust on the disc cause picture and sound deterioration. Wipe the disc from the center outwards with a soft cloth. Always keep the disc clean.





- If you cannot wipe off the dust with a soft cloth, wipe the disc lightly with a slightly moistened soft cloth and finish with a dry cloth.
- Do not use any type of solvent such as thinner, benzine, commercially available cleaners or antistatic spray for vinyl LPs. It may damage the disc.

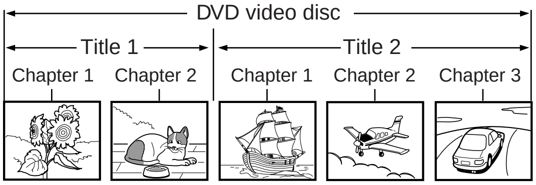
On storing discs

- Do not store discs in a place subject to direct sunlight or near heat sources.
- Do not store discs in places subject to moisture and dust such as a bathroom or near a humidifier.
- Store discs vertically in a case. Stacking or placing objects on discs outside of their case may cause warping.

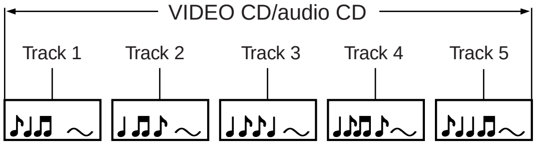
Structure of disc contents

Normally, DVD video discs are divided into titles, and the titles are sub-divided into chapters. VIDEO CDs and audio CDs are divided into tracks.

DVD video disc



VIDEO CD/audio CD



Each title, chapter or track is assigned a number, which is called “title number”, “chapter number” or “track number” respectively.
There may be discs that do not have these numbers.

Notes on copyright

It is forbidden by law to copy, broadcast, show, broadcast on cable, play in public, and rent copyrighted material without permission.

DVD video discs are copy protected, and any recordings made from these discs will be distorted.

This product incorporates copyright protection technology that is protected by method claims of certain U.S. patents and other intellectual property rights owned by Macrovision Corporation and other rights owners. Use of this copyright protection technology must be authorized by Macrovision Corporation, and is intended for home and other limited viewing uses only unless otherwise authorized by Macrovision Corporation. Reverse engineering or disassembly is prohibited.

Notes on Discs (continued)

About this owner’s manual

This owner’s manual explains the basic instructions of this DVD video player. Some DVD video discs are produced in a manner that allows specific or limited operation during playback. As such, the DVD video player may not respond to all operating commands. This is not a defect in the DVD video player. Refer to instruction notes of discs.

“⊘” may appear on the TV screen during operation. A “⊘” means that the operation is not permitted by the DVD video player or the disc.

Notes on region numbers

The region number of this DVD video player is 2. If region numbers, which stand for their playable area, are printed on your DVD video disc and you do not find 2 or ALL , disc playback will not be allowed by the player. (In this case, the DVD video player will display a message on-screen.)

On VIDEO CDs

This DVD video player supports VIDEO CDs equipped with the PBC (Version 2.0) function. (PBC is the abbreviation of Playback Control.) You can enjoy two playback variations depending on types of discs.

- **VIDEO CD not equipped with PBC function (Version 1.1)**
  Sound and movie can be played on this DVD video player in the same way as an audio CD.
- **VIDEO CD equipped with PBC function (Version 2.0)**
  In addition to operation of a VIDEO CD not equipped with the PBC function, you can enjoy playback of interactive software with search function by using the menu displayed on the TV screen (Menu Playback). Some of the functions described in this owner’s manual may not work with some discs.

Playable discs

This DVD video player can play the following discs.

	Disc Mark	Contents	Disc Size	Maximum playback time
DVD video discs	DVD VIDEO DVD VIDEO	Audio + video (moving pictures)	12 cm	Approx. 4 hours (single sided disc)
				Approx. 8 hours (double sided disc)
			8 cm	Approx. 80 minutes (single sided disc)
				Approx. 160 minutes (double sided disc)
VIDEO CDs	COMPACT disc DIGITAL VIDEO	Audio + video (moving pictures)	12 cm	Approx. 74 minutes
			8 cm	Approx. 20 minutes
Audio CDs	COMPACT disc DIGITAL AUDIO	Audio	12 cm	Approx. 74 minutes
			8 cm (CD single)	Approx. 20 minutes

The following discs are also available.
● CD-R
● CD-RW
CD-R/RW discs recorded by CD-DA method can be played. Some CD-R/RW discs may be incompatible.

- You cannot play discs other than those listed above.
- You cannot play discs of DVD-RAM, DVD-RW, etc., even if they may be labeled marks listed above.
- This DVD video player uses the PAL/NTSC colour system, and cannot play DVD video discs recorded in any other colour system (SECAM, etc.).

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  - Locating a specific chapter or track 25

Advanced playback

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  - Entering the time of the desired location 26
- **Playing Repeatedly** 27
  - Repeating a title, chapter, or track 27
  - Repeating a specific segment 27
- **Playing in a Favorite Order** 28
  - Setting titles, chapters, or tracks in a favorite order 28
- **Playing in Random Order** 29
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  - Zooming a picture 30
- **Selecting the Picture Enhancement (E.P.M.)** 31
  - Selecting the picture enhancement 31
- **Selecting the Sound Enhancement (E.A.M.)** 32
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- **Selecting the Camera Angle** 33
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- **Selecting Subtitles** 34
  - Selecting a subtitle language 34
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Function setup

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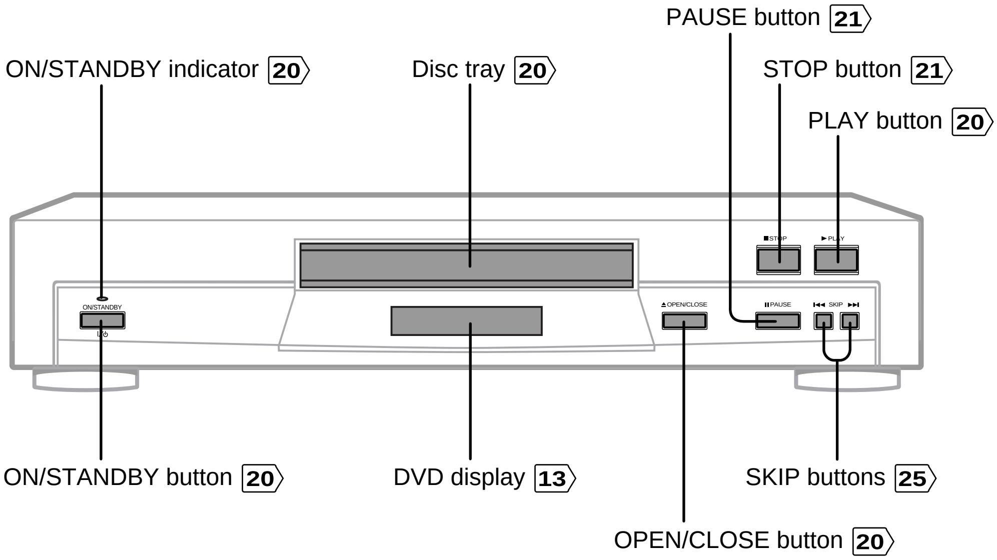
Identification of Controls

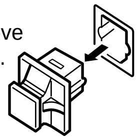
See the page in 〉 for details.

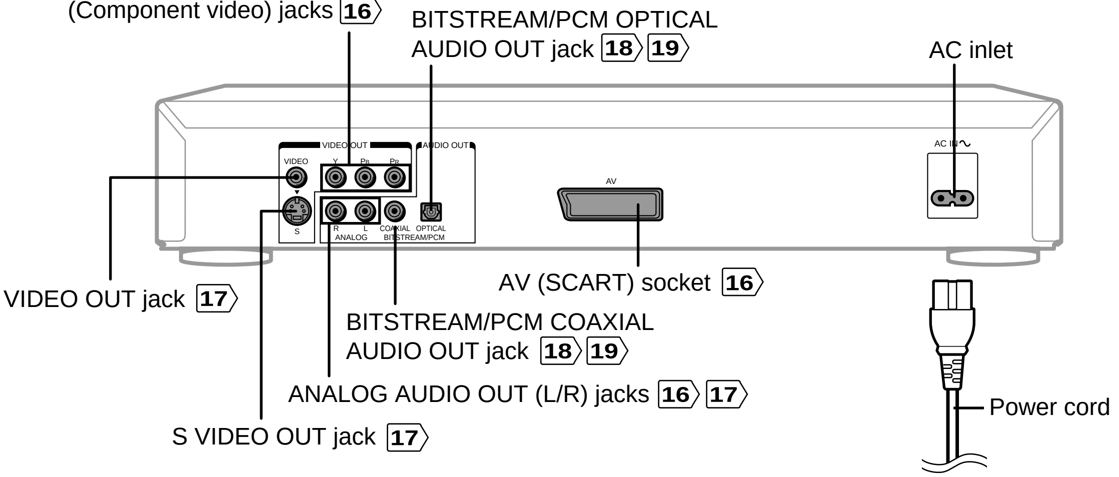
Front panel


PAUSE button 21
ON/STANDBY indicator 20
Disc tray 20
STOP button 21
PLAY button 20
STOP
PLAY
ON/STANDBY
OPEN/CLOSE
PAUSE
SKIP
ON/STANDBY button 20
DVD display 13
SKIP buttons 25
OPEN/CLOSE button 20

Rear panel

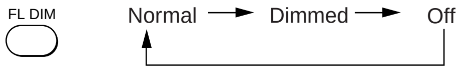
When connecting the optical digital cable, remove the cap and fit the connector into the jack firmly. When not using the jack, keep the cap inserted to protect it from dust intrusion.

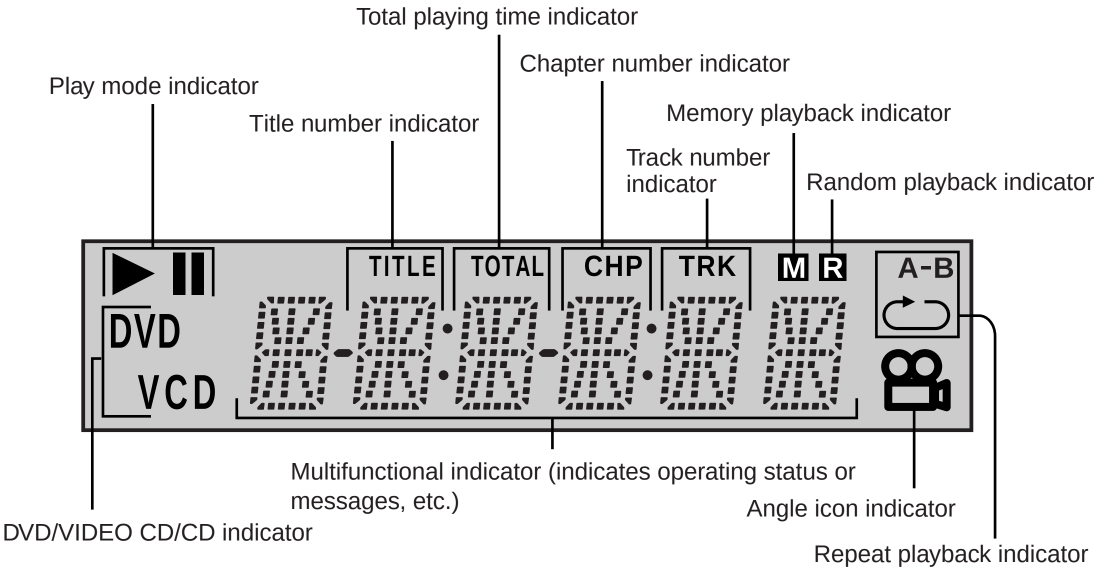



VIDEO OUT (Y/PB/PR) (Component video) jacks 16
BITSTREAM/PCM OPTICAL AUDIO OUT jack 18 19
AC inlet
VIDEO OUT
AUDIO OUT
VIDEO
Y
PB
PR
S
R
L
ANALOG
COAXIAL
OPTICAL
BITSTREAM/PCM
AV
AC IN
VIDEO OUT jack 17
AV (SCART) socket 16
BITSTREAM/PCM COAXIAL AUDIO OUT jack 18 19
ANALOG AUDIO OUT (L/R) jacks 16 17
S VIDEO OUT jack 17
Power cord

DVD display

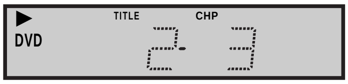
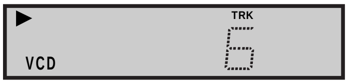
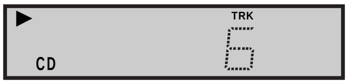
- **Pressing of the FL DIM button on the remote control changes the brightness of the display.**


FL DIM
Normal
Dimmed
Off


Total playing time indicator
Chapter number indicator
Play mode indicator
Title number indicator
Memory playback indicator
Track number indicator
Random playback indicator
TITLE
TOTAL
CHP
TRK
M
R
A-B
DVD
VCD
Multifunctional indicator (indicates operating status or messages, etc.)
Angle icon indicator
DVD/VIDEO CD/CD indicator
Repeat playback indicator

- **When you start playback, the elapsed time indicators appear. Pressing the FL SELECT button switches them to the title/chapter/track number indicators. Some discs may not permit this operation.**

The indicators vary depending on the kinds of discs you play.

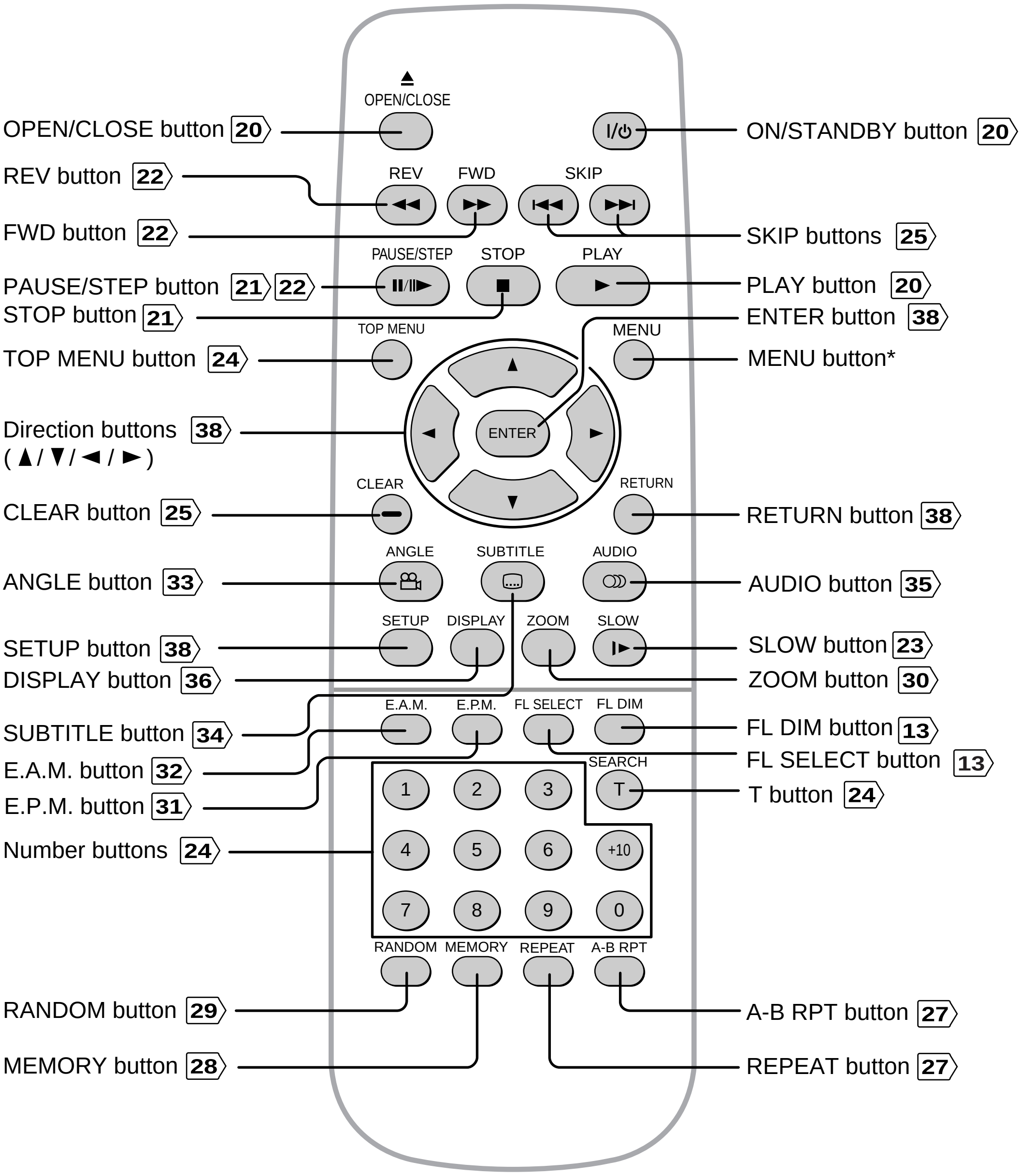
DVD video disc	VIDEO CD	Audio CD
• During playback: Example	• During playback: Example	• During playback: Example
		
Playing chapter 3 of title 2	**Playing track 6**	**Playing track 6**
Some discs may not display chapter numbers or elapsed time.	Some discs may not display track numbers or elapsed time.	

TITLE
CHP
DVD
2-3
TRK
VCD
6
TRK
CD
6

Identification of Controls (continued)

The instructions in this manual describe the functions on the remote control. See the page in ⟩ for details.

Remote control

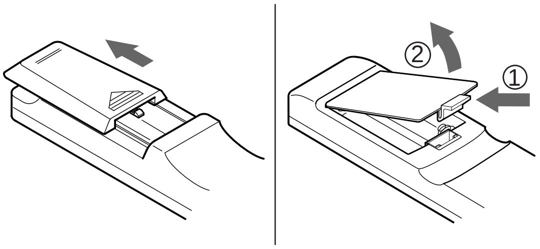

OPEN/CLOSE
OPEN/CLOSE button 20
ON/STANDBY button 20
I/⏻
REV
FWD
SKIP
REV button 22
FWD button 22
SKIP buttons 25
PAUSE/STEP
STOP
PLAY
PAUSE/STEP button 21 22
STOP button 21
PLAY button 20
ENTER button 38
TOP MENU
MENU
TOP MENU button 24
MENU button*
Direction buttons 38
(▲/ ▼/ ◄ / ►)
ENTER
CLEAR
RETURN
CLEAR button 25
RETURN button 38
ANGLE
SUBTITLE
AUDIO
ANGLE button 33
AUDIO button 35
SETUP
DISPLAY
ZOOM
SLOW
SETUP button 38
DISPLAY button 36
SLOW button 23
ZOOM button 30
E.A.M.
E.P.M.
FL SELECT
FL DIM
SUBTITLE button 34
E.A.M. button 32
E.P.M. button 31
FL DIM button 13
FL SELECT button 13
SEARCH
T
T button 24
Number buttons 24
1
2
3
4
5
6
+10
7
8
9
0
RANDOM
MEMORY
REPEAT
A-B RPT
RANDOM button 29
MEMORY button 28
A-B RPT button 27
REPEAT button 27

* **MENU button**
Use the MENU button to display the menu included on many DVD video discs. To operate a menu, follow the instructions in “Locating a title using the top menu.” 24

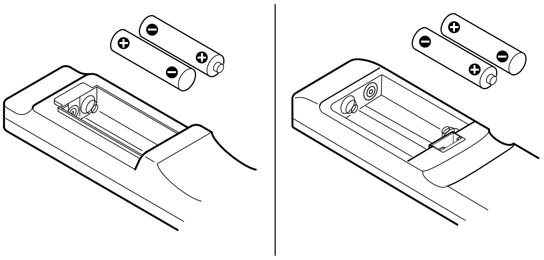
■ **About the illustrations of the battery compartment**
There are two types of battery compartment in the supplied remote controls. (This does not mean a difference in performance between the two.)
Refer to either illustration depending on the actual remote control.

Loading batteries

1 Open the cover.



2 Insert batteries (R6 size).



Make sure to match the + and – on the batteries to the marks inside the battery compartment.

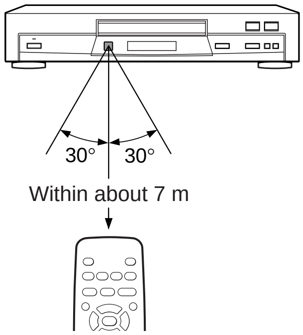
3 Close the cover.

Notes on batteries
Improper use of batteries may cause battery leakage and corrosion. To operate the remote control correctly, follow the instructions below.

- Do not insert batteries into the remote control in the wrong direction.
- Do not charge, heat, open, or short-circuit the batteries. Do not throw batteries into a fire.
- Do not leave dead or exhausted batteries in the remote control.
- Do not use different types of batteries together, or mix old and new batteries.
- If you do not use the remote control for a long period of time, remove the batteries to avoid possible damage from battery corrosion.
- If the remote control does not function correctly or if the operating range becomes reduced, replace all batteries with new ones.
- If battery leakage occurs, wipe the battery liquid from the battery compartment, then insert new batteries.

Operating with the remote control

Point the remote control at the remote sensor and press the buttons.



Distance: About 7 m from the front of the remote sensor
Angle: About 30° in each direction of the front of the remote sensor

* Do not expose the remote sensor of the DVD video player to a strong light source such as direct sunlight or other illumination. If you do so, you may not be able to operate the DVD video player via the remote control.

Notes on the remote control

- Direct the remote control at the remote sensor of the DVD video player.
- Do not drop or give the remote control a shock.
- Do not leave the remote control near an extremely hot or humid place.
- Do not spill water or put anything wet on the remote control.
- Do not open the remote control.

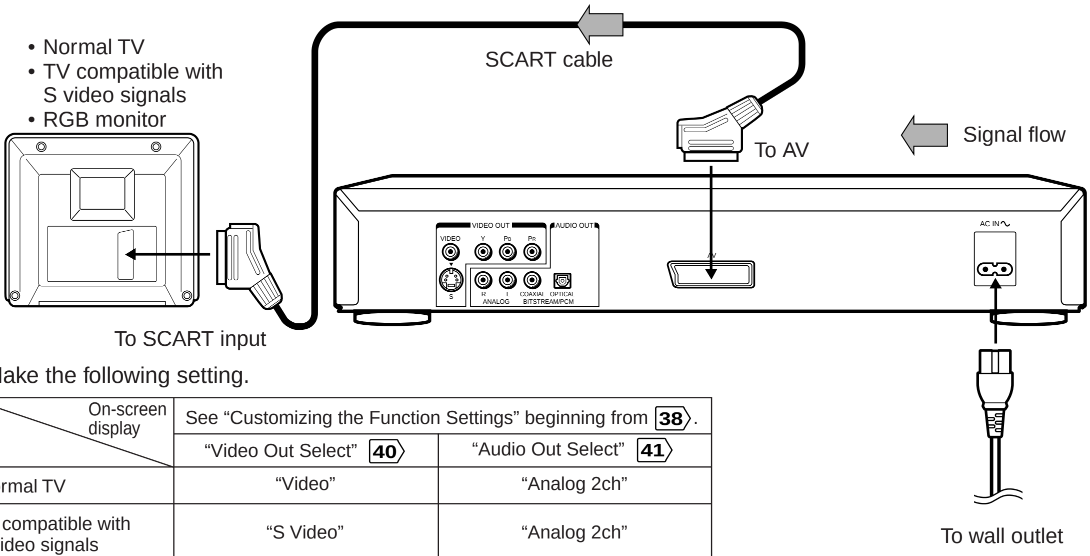
Connecting to a TV

Connect the DVD video player to your TV.

For details of output sound, see 35.

Connect the DVD video player directly to your TV. If you connect the DVD video player to a VTR, TV/VTR combination or video selector, the playback picture may be distorted as DVD video discs are copy protected.

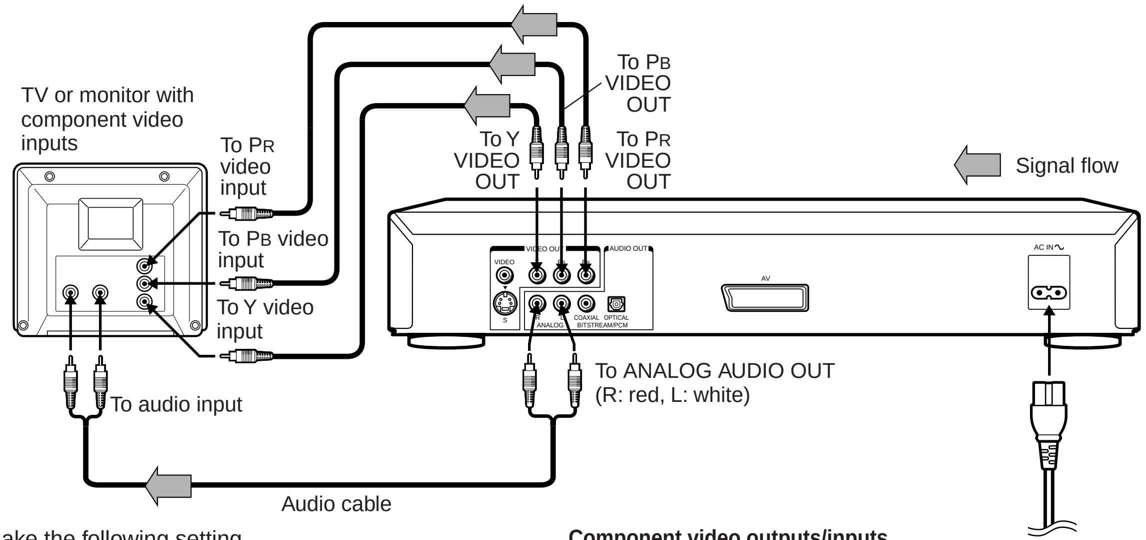
Connecting to a TV (Using the SCART socket)


• Normal TV
• TV compatible with S video signals
• RGB monitor
SCART cable
To AV
Signal flow
VIDEO OUT
AUDIO OUT
VIDEO
Y
PB
PR
S
R
L
ANALOG
COAXIAL
OPTICAL
BITSTREAM/PCM
AV
AC IN~
To SCART input
To wall outlet

- Make the following setting.

On-screen display / TV	See "Customizing the Function Settings" beginning from 38.	
	"Video Out Select" 40	"Audio Out Select" 41
Normal TV	"Video"	"Analog 2ch"
TV compatible with S video signals	"S Video"	"Analog 2ch"
RGB monitor	"RGB"	"Analog 2ch"

Connecting to a TV (Using the component video jacks)


TV or monitor with component video inputs
To PR video input
To PB video input
To Y video input
To audio input
To PB VIDEO OUT
To Y VIDEO OUT
To PR VIDEO OUT
Signal flow
VIDEO OUT
AUDIO OUT
VIDEO
S
R
ANALOG
COAXIAL
OPTICAL
BITSTREAM/PCM
AV
AC IN~
To ANALOG AUDIO OUT (R: red, L: white)
Audio cable
To wall outlet

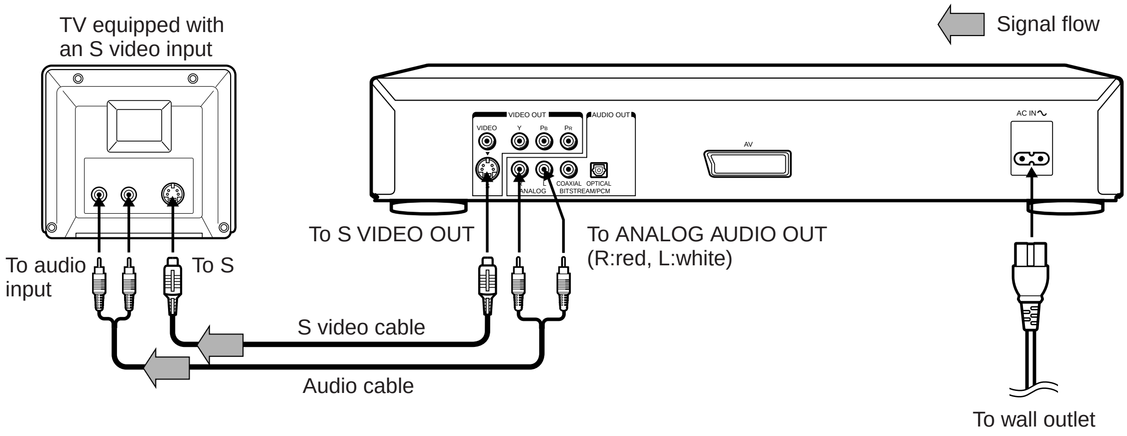
- Make the following setting.

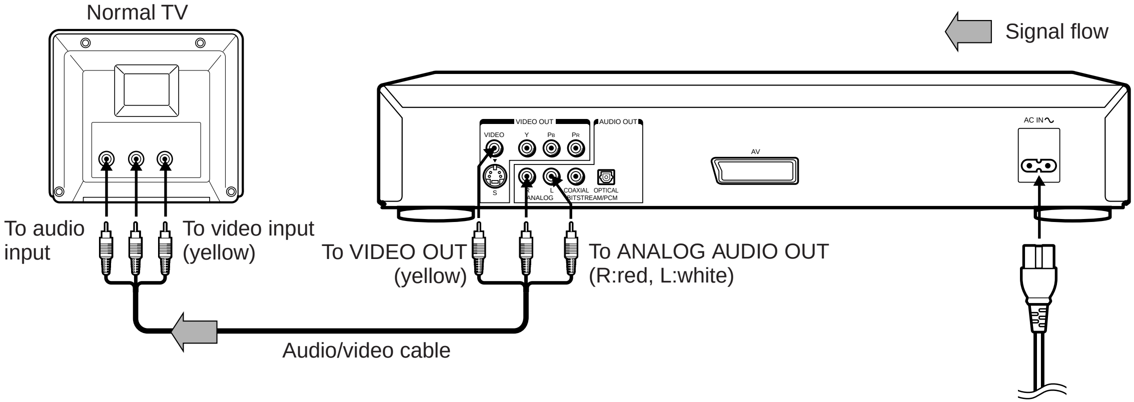
On-screen display / TV	See "Customizing the Function Settings" beginning from 38.	
	"Video Out Select" 40	"Audio Out Select" 41
TV or monitor with component video inputs	"Video" or "S Video"	"Analog 2ch"

Component video outputs/inputs
Some TVs or monitors are equipped with component video inputs. Connecting to these inputs allows you to enjoy higher quality picture playback. Actual labels for component video inputs may vary depending on the TV manufacturer. (ex. Y, R-Y, B-Y or Y, CB, CR)
In some TVs or monitors, the colour levels of the playback picture may be reduced slightly or the tint may change. In such a case, adjust the TV or monitor for optimum performance.

Connecting to a TV (Using the phono type jacks)

■ Select the connection type depending on the TV. (TV equipped with an S video input / Normal TV)


TV equipped with
an S video input
Signal flow
VIDEO OUT
AUDIO OUT
VIDEO
Y
PB
PR
COAXIAL
OPTICAL
ANALOG
BITSTREAM/PCM
AV
AC IN
To S VIDEO OUT
To ANALOG AUDIO OUT
(R:red, L:white)
To audio
input
To S
S video cable
Audio cable
To wall outlet


Normal TV
Signal flow
VIDEO OUT
AUDIO OUT
VIDEO
Y
PB
PR
S
L
COAXIAL
OPTICAL
ANALOG
BITSTREAM/PCM
AV
AC IN
To audio
input
To video input
(yellow)
To VIDEO OUT
(yellow)
To ANALOG AUDIO OUT
(R:red, L:white)
Audio/video cable
To wall outlet

- Make the following setting.

On-screen display TV	See “Customizing the Function Settings” beginning from 38.	
	“Video Out Select” 40	“Audio Out Select” 41
TV equipped with an S video input	“S Video”	“Analog 2ch”
Normal TV	No need to set.	“Analog 2ch”

Notes

- Refer to the owner’s manual of the connected equipment as well.
- When you connect the DVD video player to other equipment, be sure to turn off the power and unplug all of the equipment from the wall outlet before making any connections.
- If you place the DVD video player near a tuner or radio, the radio broadcast sound might be distorted. In this case, place the DVD video player away from the tuner and radio.
- The output sound of the DVD video player has a wide dynamic range. Be sure to adjust the receiver’s volume to a moderate listening level. Otherwise, the speakers may be damaged by a sudden high volume sound.
- Turn off the amplifier before you connect or disconnect the DVD video player’s power cord. If you leave the amplifier power on, the speakers may be damaged.
- If your television set has one audio input, connect the DVD video player to a Y cable adapter (not supplied) and then connect to your TV.

Connecting to Optional Equipment

You can enjoy high quality dynamic sounds by connecting the DVD video player to optional audio equipment.

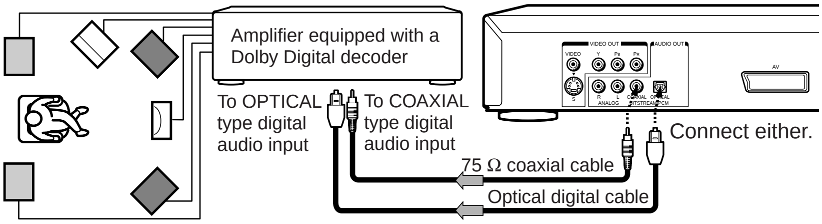
For connection to your TV, see “Connecting to a TV” 16 17.
For details of output sound, see 35.

■ : Front speaker
□ : Rear speaker
▯ : Sub woofer
▯ : Center speaker
⇨ : Signal flow

Connecting to an amplifier equipped with a Dolby Digital decoder

Dolby Digital
Dolby Digital is the surround sound technology used in theaters showing the latest movies, and is now available to reproduce this realistic effect in the home. You can enjoy motion picture and live concert DVD video discs with this dynamic realistic sound by connecting the DVD video player to a 6 channel amplifier equipped with a Dolby Digital decoder or Dolby Digital processor. If you have a Dolby Pro Logic Surround decoder, you will obtain the full benefit of Pro Logic from the same DVD movies that provide full 5.1-channel Dolby Digital soundtracks, as well as from titles with the Dolby Surround mark.

Manufactured under license from Dolby Laboratories. “Dolby”, “Pro Logic”, and the double-D symbol are trademarks of Dolby Laboratories. Confidential unpublished works. ©1992-1997 Dolby Laboratories. All rights reserved.


Amplifier equipped with a Dolby Digital decoder
To OPTICAL type digital audio input
To COAXIAL type digital audio input
VIDEO OUT
AUDIO OUT
VIDEO
Y
PB
PR
S
R
L
ANALOG
COAXIAL
OPTICAL
BITSTREAM/PCM
AV
Connect either.
75 Ω coaxial cable
Optical digital cable

- Use DVD video discs encoded via the Dolby Digital recording system.
- Make the following setting.

On-screen display	Select:	Page
“Audio Out Select”	“Bitstream”	38 41
Recording system	DD D	35

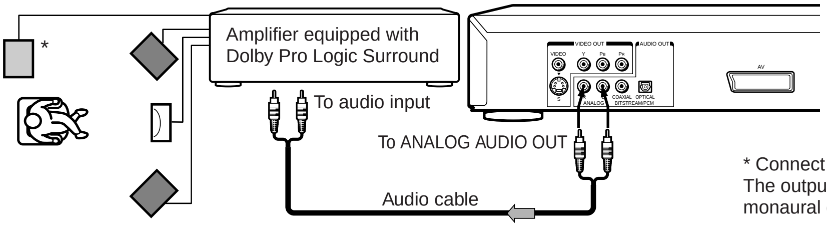
Connecting to an amplifier equipped with Dolby Pro Logic Surround

Dolby Pro Logic Surround
You can enjoy the dynamic realistic sound of Dolby Pro Logic Surround by connecting an amplifier and speaker system (right and left front speakers, a center speaker, and one or two rear speakers).

- With an amplifier equipped with Dolby Digital
  Connect the equipment the same way as described in “Connecting to an amplifier equipped with a Dolby Digital decoder.” Refer to that amplifier’s owner’s manual and set the amplifier so you can enjoy Dolby Pro Logic Surround sound.
- With an amplifier not equipped with Dolby Digital
  Connect the equipment as follows.

- Make the following setting.

On-screen display	Select:	Page
“Audio Out Select”	“Analog 2ch”	38 41


*
Amplifier equipped with Dolby Pro Logic Surround
To audio input
VIDEO OUT
AUDIO OUT
VIDEO
Y
PB
PR
S
ANALOG
COAXIAL
OPTICAL
BITSTREAM/PCM
AV
To ANALOG AUDIO OUT
Audio cable

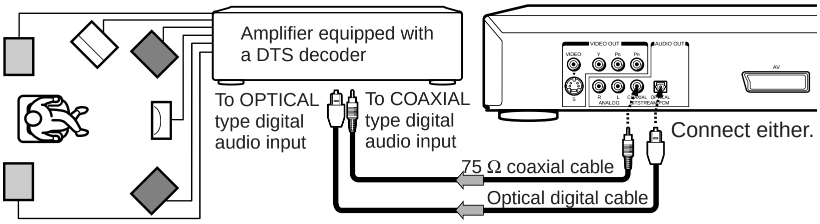
Be sure to set “Audio Out Select” to “Analog 2ch” when you enjoy sounds of Dolby Pro Logic Surround using this connection.

* Connect one or two rear speakers.
The output sound from the rear speakers will be monaural even if you connect two rear speakers.

Connecting to an amplifier equipped with a DTS decoder

Digital Theater Systems (DTS)
DTS is a high quality surround technology used in theaters and now available for home use, on DVD video discs or audio CDs.
If you have a DTS decoder or processor, you can obtain the full benefit of 5.1 channel DTS encoded sound tracks on DVD video discs or audio CDs.

“DTS” and “DTS Digital Surround” are trademarks of Digital Theater Systems, Inc.


Amplifier equipped with a DTS decoder
To OPTICAL type digital audio input
To COAXIAL type digital audio input
VIDEO OUT
AUDIO OUT
VIDEO
Y
PB
PR
S
R
L
ANALOG
COAXIAL
OPTICAL
BITSTREAM/PCM
AV
Connect either.
75 Ω coaxial cable
Optical digital cable

- Use DVD video discs or audio CDs encoded via the DTS recording system.
- Make the following setting.

On-screen display	Select:	Page
“Audio Out Select”	“Bitstream”	38 41
Recording system	DTS	35

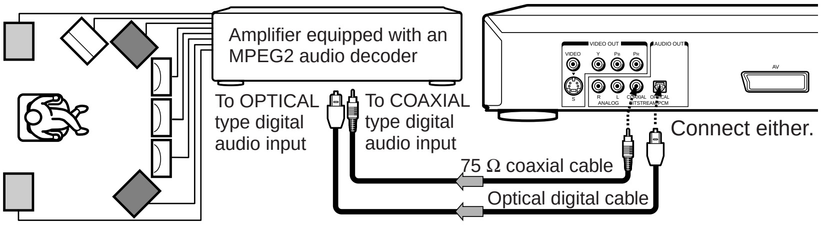
Warning

- When you are connecting (via the BITSTREAM/PCM AUDIO OUT jack) an AV decoder that does not have Dolby Digital, Digital Theater Systems (DTS) or MPEG2 decoding function, be sure to set “Audio Out Select” to “PCM” from the on-screen displays 38 41. Otherwise, high volume sound may damage your hearing as well as the speakers.
- When playing DTS-encoded discs (DVD video discs and audio CDs), excessive noise may be output from the analog stereo jacks. To avoid possible damage to the audio system, you should take proper precautions when the ANALOG AUDIO OUT (L/R) jacks of the DVD video player are connected to an amplification system. To enjoy DTS Digital Surround™ playback, an external 5.1 channel DTS Digital Surround™ decoder system must be connected to the BITSTREAM/PCM AUDIO OUT jack of the DVD video player.

Connecting to an amplifier equipped with an MPEG2 audio decoder

MPEG2 sound

You can enjoy motion picture and live concert DVD video discs with dynamic realistic sound by connecting an amplifier equipped with an MPEG2 audio decoder or MPEG2 audio processor.


Amplifier equipped with an MPEG2 audio decoder
VIDEO OUT
AUDIO OUT
VIDEO
Y
PB
PR
S
R
L
ANALOG
COAXIAL
OPTICAL
BITSTREAM/PCM
AV
To OPTICAL type digital audio input
To COAXIAL type digital audio input
Connect either.
75 Ω coaxial cable
Optical digital cable

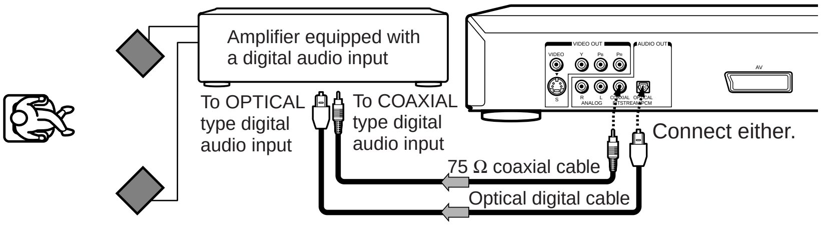
- Use DVD video discs encoded via the MPEG2 recording system.
- Make the following setting.

On-screen display	Select:	Page
“Audio Out Select”	“Bitstream”	38 41
Recording system	MPEG	35

Connecting to an amplifier equipped with a digital audio input

2 channel digital stereo

You can enjoy the dynamic sound of 2 channel digital stereo by connecting an amplifier equipped with a digital audio input and speaker system (right and left front speakers).


Amplifier equipped with a digital audio input
VIDEO OUT
AUDIO OUT
VIDEO
Y
PB
PR
S
R
L
ANALOG
COAXIAL
OPTICAL
BITSTREAM/PCM
AV
To OPTICAL type digital audio input
To COAXIAL type digital audio input
Connect either.
75 Ω coaxial cable
Optical digital cable

- Make the following setting.

On-screen display	Select:	Page
“Audio Out Select”	“PCM”	38 41

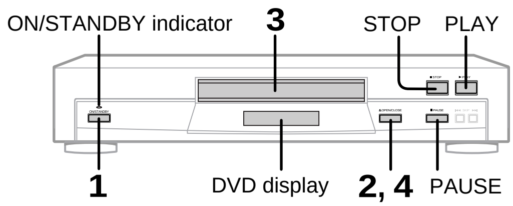
Notes

- DO NOT connect the BITSTREAM/PCM AUDIO OUT jack of the DVD video player to the AC-3 RF input of a Dolby Digital Receiver. This input on your A/V Receiver is reserved for Laserdisc use only and is incompatible with the BITSTREAM/PCM AUDIO OUT jack of the DVD video player.
- Connect the BITSTREAM/PCM AUDIO OUT jack of the DVD video player to the “OPTICAL” or “COAXIAL” input of a Receiver or Processor.
- Refer to the owner’s manual of the connected equipment as well.
- When you connect the DVD video player to other equipment, be sure to turn off the power and unplug all of the equipment from the wall outlet before making any connections.
- The output sound of the DVD video player has a wide dynamic range. Be sure to adjust the receiver’s volume to a moderate listening level. Otherwise, the speakers may be damaged by a sudden high volume sound.
- Turn off the amplifier before you connect or disconnect the DVD video player’s power cord. If you leave the amplifier power on, the speakers may be damaged.

Playing a Disc

This section shows you the basics on how to play a disc.

CAUTION
Keep your fingers well clear of the disc tray as it is closing. Neglecting to do so may cause serious personal injury.



DVD VCD CD Basic playback

Preparations
- When you want to view a disc, turn on the TV and select the video input connected to the DVD video player.
- When you want to enjoy the sound of discs from the audio system, turn on the audio system and select the input connected to the DVD video player.

1 Press ON/STANDBY.

I/⏻

The DVD video player turns on and the colour of the ON/STANDBY indicator changes from red (standby) to green (on).

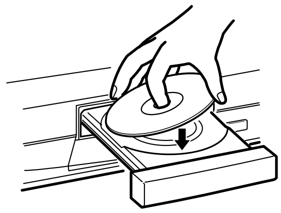
When the DVD video player is turned on for the first time, a message appears. Press ENTER, and make the proper settings before proceeding to step 2. 46

2 Press OPEN/CLOSE.

▲ OPEN/CLOSE

The disc tray opens.

3 Place the disc on the disc tray.



With the playback side down

- There are two different disc sizes. Place the disc in the correct guide on the disc tray. If the disc is out of the guide, it may damage the disc and cause the DVD video player to malfunction.
- Do not place a disc which is unplayable in this DVD video player.

4 Press OPEN/CLOSE to close the disc tray.

▲ OPEN/CLOSE

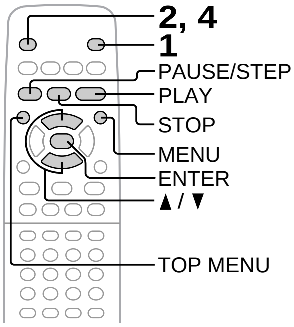
Playback starts.

If you insert a DVD video disc that contains a top menu, a menu may appear. See “Locating a title using the top menu.” 24
- You may need to press the TOP MENU or MENU button to display disc menu (depending on the actual DVD video disc.)

■ To start playback in the stop mode

Press **PLAY**.

PLAY
►



■ To obtain a higher quality picture

Occasionally, some picture noise not usually visible during a normal broadcast may appear on the TV screen while playing a DVD video disc because the high resolution pictures on these discs include a lot of information. While the amount of noise depends on the TV you use with this DVD video player, you should generally reduce the sharpness adjustment on your TV when viewing DVD video discs.

■ About DVD VCD CD

The DVD VCD CD icons on the heading bar show the playable discs for the function described under that heading.

DVD : You can use this function with DVD video discs.
VCD : You can use this function with VIDEO CDs.
CD : You can use this function with audio CDs.

■ To pause playback (still mode)

Press **PAUSE/STEP** during playback.

PAUSE/STEP
II/I▶

To resume normal playback, press the PLAY button.

- Sound is muted during still mode.

■ To stop playback

Press **STOP**.

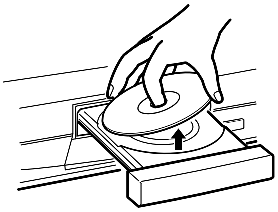
STOP
■

■ To remove the disc

Press **OPEN/CLOSE**.

▲
OPEN/CLOSE

Remove the disc after the disc tray opens completely.



Be sure to press the OPEN/CLOSE button to close the disc tray after you remove the disc.

■ About the screen saver

If you pause a picture of a DVD video disc and leave it still for a long while, the screen saver of the DVD video player automatically appears (when “Screen Saver” is set to “On” 43). To turn off the screen saver, press the PLAY button.

■ Automatic Power Off function

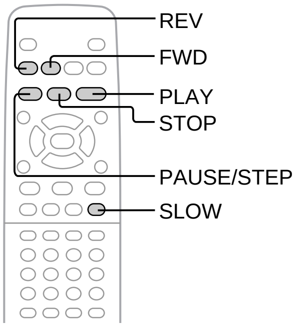
If the DVD video player is stopped, or the screen saver is engaged for approximately 20 minutes, the DVD video player will automatically turn itself off.

Notes

- Do not move the DVD video player during playback. Doing so may damage the disc.
- Use the OPEN/CLOSE button to open and close the disc tray. Do not push the disc tray while it is moving. Doing so may cause the DVD video player to malfunction.
- Do not push up on the disc tray or put any objects other than discs on the disc tray. Doing so may cause the DVD video player to malfunction.
- In many instances, a menu screen will appear after playback of a movie is completed. Prolonged display of an on-screen menu may damage your television set, permanently etching that image onto its screen. To avoid this, be sure to press the STOP button on your remote control once the movie is completed.

Playing a Disc (continued)

You can play discs at various speeds, and resume playback from the location where you stopped playback.



DVD VCD CD Playing in fast reverse or fast forward directions

Press REV or FWD during playback.

REV ◄◄ FWD ►►

REV: Fast reverse playback
FWD: Fast forward playback

Each time you press the REV or FWD button, the playback speed changes.

■ To resume normal playback

Press **PLAY**.

PLAY ►

Notes

- The DVD video player mutes sound and omits subtitles during reverse and forward scan of DVD video discs. However, the DVD video player plays sound during fast forward or fast reverse play of audio CDs.
- The playback speed may differ depending on the disc.

DVD VCD Playing frame by frame

Press PAUSE/STEP during still playback.

PAUSE/STEP II/I►

Each time you press the PAUSE/STEP button, the picture advances one frame.

■ To resume normal playback

Press **PLAY**.

PLAY ►

Note

The sound is muted during frame by frame playback.

DVD VCD Playing in slow-motion

Press SLOW during playback.

SLOW I►

Each time you press the SLOW button, the slow-motion speed changes.

■ To resume normal playback

Press **PLAY**.

PLAY ►

Notes

- The sound is muted during slow-motion playback.
- The playback speed may differ depending on the disc.

DVD VCD CD Resuming playback from the same location

1 Press STOP at the location where you want to interrupt playback.

STOP ■

The DVD video player memorizes the location where playback is stopped.

2 Press PLAY.

PLAY ►

The DVD video player resumes playback from the location where you stopped playback.

■ To start playback from the beginning regardless of the location where you stopped playback

1 Press **STOP** twice.

STOP ■

The DVD video player's memory is cleared.

2 Press **PLAY**.

PLAY ►

DVD Playback starts from the beginning of the current title.

VCD CD Playback starts from the beginning of the disc.

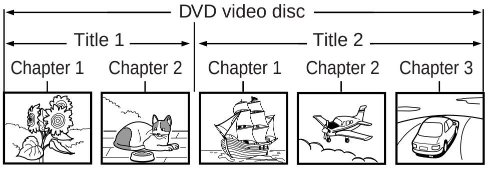
- If you want to return to the beginning of a DVD video disc, open and close the disc tray once with the OPEN/CLOSE button before pressing the PLAY button.

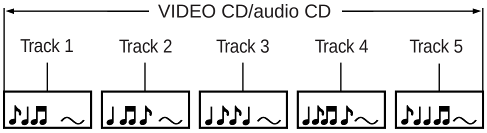
Notes

- The DVD video player's memory is also cleared when:
  - you change the parental lock setting 44 or select a disc menu language 42.
  - you open the disc tray.
- There may be a difference in the location where playback resumes depending on the disc.
- Settings you changed using the on-screen displays while the DVD video player keeps a location in the memory may function only after the memory is cleared.

Locating a Specific Title, Chapter, or Track

Normally, DVD video discs are divided into titles, and the titles are sub-divided into chapters. VIDEO CDs and audio CDs are divided into tracks. You can quickly locate any specific title, chapter, or track.





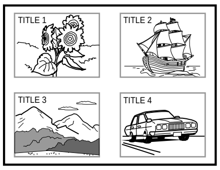
DVD Locating a title using the top menu

1 Press TOP MENU.

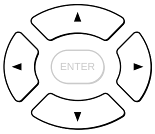
TOP MENU

The top menu appears on the TV screen.

e.g.

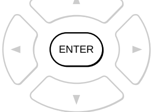


2 Press ▲ / ▼ / ◄ / ► to select the title you want.



If the titles in the top menu are assigned a number, you can directly locate a specific title by pressing its designated number with the number buttons.

3 Press ENTER.



Playback starts from chapter 1 of the selected title.

Notes

- The instructions above describe basic procedures which may vary depending on the contents of the DVD video disc. If different instructions appear on the TV screen, follow those instructions.
- If you display the top menu during playback and press the TOP MENU button again without selecting any title, the DVD video player may resume playback from the point where you first pressed the TOP MENU button (depending on the actual DVD video disc.)
- This method of locating a title is available only on a disc that contains a top menu.
- Instruction notes of discs may refer to the button that displays the top menu as TITLE button.

DVD Locating a title by entering the title number

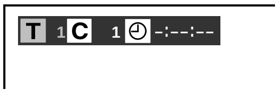
1 Press T.

SEARCH

T

Make sure that the space of “T (Title)” is highlighted.
(You can shift the highlight using the ◄ / ► buttons.)

e.g.



T 1 C 1 -:--:--

2 Enter the number for the title you want, using ▲ / ▼ or the number buttons.

e.g. To select title 2 ②

To select title 12 ① ➞ ②

3 Press PLAY.

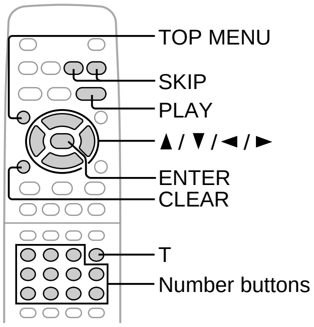
PLAY

►

Playback starts from chapter 1 of the selected title.

Notes

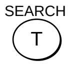
- Pressing the CLEAR button resets the title and chapter numbers. To clear the “T (Title)” and “C (Chapter)” display, press the T button several times.
- This method of locating a title is available only on a disc that contains title numbers.



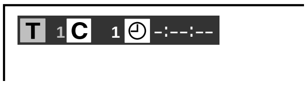
Locating a specific chapter or track directly

1 **Press T.**

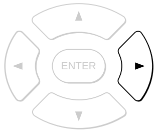
If you are using a VIDEO CD/audio CD, skip steps 1 and 2, then at step 3, enter the number for the track you want using the number buttons.



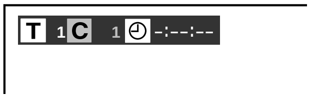
e.g.



2 **Press ► to highlight the space of “C (Chapter).”**



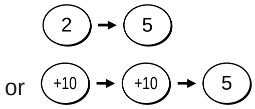
e.g.



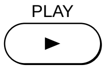
3 **Enter the number for the chapter or track you want, using ▲ / ▼ or the number buttons.**

When you use the number buttons, you can use the +10 button to select numbers from 10 through 99.

e.g. To select chapter or track 25



4 **Press PLAY.**



Playback starts from the selected chapter or track.

■ To select a title and chapter number at the same time

Perform step 1, and enter a title number you want in the space of “T (Title)” using the number buttons or the ▲ / ▼ buttons then perform steps 2 to 4.

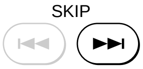
Note

Pressing the CLEAR button resets the title and chapter numbers. To clear the “T (Title)” and “C (Chapter)” display, press the T button several times.

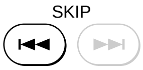
Locating a specific chapter or track

Press SKIP ⏮ or ⏭ repeatedly to display the chapter or track number you want.

Playback starts from the selected chapter or track.



To locate succeeding chapters or tracks



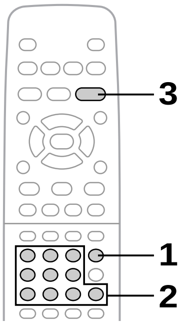
Playback starts from the beginning of the current chapter or track.
When you press twice, playback starts from the beginning of the preceding chapter or track.

Notes

- Some titles may not display chapter numbers.
- If you press and hold the SKIP ⏮ or ⏭ button on the front panel during playback, the DVD video player performs fast reverse or fast forward playback. You can vary the speed by pressing the button repeatedly.
  To locate chapters or tracks during fast reverse or fast forward playback, first press the PLAY button to resume normal playback, then use the SKIP ⏮ or ⏭ button.
- When you set “Title Stop” to “Off” 45, you can access chapters in another title. If you go back to the preceding title by pressing the SKIP ⏮ button, the DVD video player locates the first chapter of the title. When “Title Stop” is set to “On,” you can access chapters only within the current title.

Accessing a Specific Location Directly

You can access a specific location by entering its corresponding time (hours, minutes, seconds).



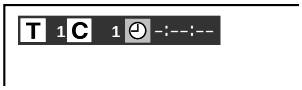
DVD VCD CD Entering the time of the desired location

1 Press T three times.

SEARCH
T

You may have to press further depending on the disc. Press the button repeatedly until the clock icon is highlighted.

e.g.

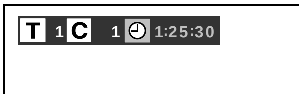


T 1 C 1 -:--:--

2 Press the number buttons to enter the time.

e.g.

1 → 2 → 5 → 3 → 0



T 1 C 1 1:25:30

3 Press PLAY.

PLAY
►

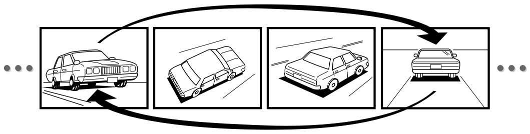
Playback starts from the desired location.

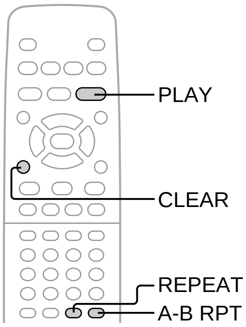
Notes

- Some discs may not respond to this process.
- Some scenes may not be located precisely as you specified.
- This method for accessing specific locations is available only within the current title of the DVD video disc or within the current track of the VIDEO CD/audio CD.

Playing Repeatedly

You can play a specific title, chapter, track, or segment repeatedly.
(Title repeat, chapter/track repeat, A-B repeat)



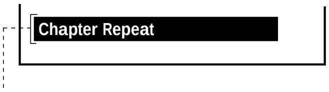


DVD VCD CD Repeating a title, chapter, or track

1 Press REPEAT.

REPEAT

Each time you press the REPEAT button, the repeat mode changes as follows.



DVD	Chapter Repeat	Repeats the current chapter.
DVD	Title Repeat	Repeats the current title.
VCD CD	Track Repeat	Repeats the current track.
DVD VCD CD	All Repeat	Repeats the entire disc.
	Repeat Off	Resumes normal playback.

2 Press PLAY.

PLAY ►

The DVD video player starts repeat playback.
Press the PLAY button within about 5 seconds after you press the REPEAT button.

To resume normal playback

Press **CLEAR**.

CLEAR

Note

Some discs may not permit repeat operation.

DVD VCD CD Repeating a specific segment

1 Press A-B RPT at the beginning of the segment (point A) you want to play repeatedly.

A-B RPT

2 Press A-B RPT again at the end of the segment (point B).

A-B RPT

The DVD video player automatically returns to point A and starts repeat playback of the selected segment (A-B).

To resume normal playback

Press **CLEAR**.

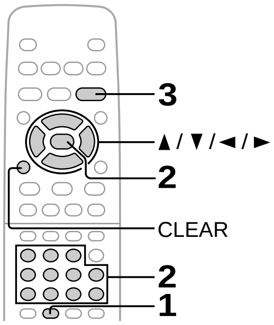
CLEAR

Notes

- Some discs may not permit A-B repeat operation.
- You cannot set the A-B repeat function for a segment that includes multiple camera angles 33.
- You can specify a segment only within the current title or track (VIDEO CD).
- There may be a slight difference between point A and the location where playback actually resumes depending on the disc.

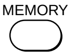
Playing in a Favorite Order

You can combine your favorite titles, chapters, or tracks and play them in the order you determine. You can program up to 30 selections into the memory. (Memory playback)



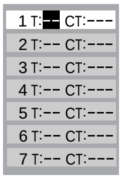
DVD VCD CD Setting titles, chapters, or tracks in a favorite order

1 Insert a disc and press MEMORY during stop.



The following display appears.

e.g.



```
1 T:-- CT:---
2 T:-- CT:---
3 T:-- CT:---
4 T:-- CT:---
5 T:-- CT:---
6 T:-- CT:---
7 T:-- CT:---
```

T: Title number
CT: Chapter number or track number

2 Select the items in the order you want by pressing the number buttons, then ENTER for each item.

Each time you press the ◄ / ► button, the spaces of "T" and "CT" are highlighted in turn. Highlight where you want to enter, then press the corresponding number buttons.

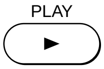
To select another chapter in the same title, you do not need to select the title number.

To select tracks from a VIDEO CD/audio CD in order, press the **number buttons** for the track, then press the **ENTER** button for each selection you want.

Note

The space of "T (Title)" may be showing a number. Neglect this number when using a VIDEO CD/audio CD.

3 Press PLAY while the display appears on the TV screen.



The DVD video player starts memory playback.

■ To change the programmed selections

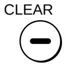
1 While the display appears on the TV screen, press ▲ / ▼ / ◄ / ► to move the highlighted bar to the item you want to change.
2 Change the selection following the instructions in step **2**.

■ To cancel the programmed selections

1 While the display appears on the TV screen, press ▲ / ▼ to move the highlighted bar to the item you want to cancel.
2 Press **CLEAR**.

■ To resume normal playback from memory playback

Press **CLEAR**.



The memory playback indicator disappears.

■ To program during playback

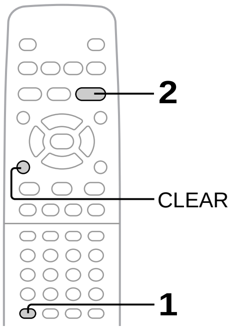
If you press the **MEMORY** button during playback, a programming display appears.
Follow steps **2** and **3**.

Notes

- Some discs may not permit memory playback operation.
- If you press the REPEAT button during memory playback, the DVD video player repeats the current memory playback.
- If you press the MEMORY or RETURN button while the display appears on the TV screen, the display disappears.
- The programmed selections will be cleared when you turn off the DVD video player.

Playing in Random Order

You can play titles, chapters within a title, or tracks in random order. (Random playback)



DVD VCD CD Playing titles, chapters or tracks in random order

1 Press RANDOM.

RANDOM

Each time you press the RANDOM button, the random playback mode changes as follows.

Chapter Random

DVD	Chapter Random	Plays chapters within the current title in random order.
DVD	Title Random	Plays titles in random order.
VCD CD	Track Random	Plays tracks in random order.
	Random Off	Resumes normal playback.

If you press the RANDOM button during playback, the DVD video player automatically starts random playback after finishing the current title, chapter or track.

2 Press PLAY.

PLAY ►

The DVD video player starts random playback.
Press the PLAY button within about 5 seconds after you press the RANDOM button.

■ To resume normal playback

Press **CLEAR**.

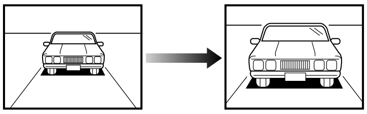
CLEAR

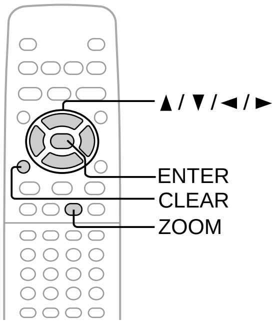
Notes

- Some discs may not permit random playback operation.
- You cannot use the random playback function in conjunction with the memory playback function.

Zooming a Picture

You can magnify areas within a picture.





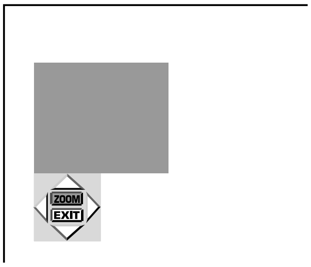
DVD Zooming a picture

Press ZOOM during normal, slow or still playback.

ZOOM

The DVD video player enters the zoom playback mode and displays the icon.

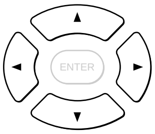
e.g.



ZOOM : As you repeatedly press the ENTER (or ZOOM) button while “ZOOM” is selected, the magnification level changes.
Variation of the levels includes reducing.

EXIT : If you press the ENTER button while “EXIT” is selected, you can turn off the icon, keeping the current magnification level.

You can shift the highlight within the icon by the ▲/▼/◄/► buttons.



If you press and hold the ▲/▼/◄/► buttons, the zoom point shifts.

CLEAR

Pressing the CLEAR button restores the zoom point to the center of the picture.

■ To resume normal playback

While “ZOOM” is selected, press **ZOOM** repeatedly to turn off the icon.
Picture restores the size when the icon disappears.

ZOOM

- The ENTER button cannot cancel zoom playback if you have turned off the icon by selecting “EXIT.” To restore normal picture size, press the ZOOM button to display the icon, then further press the ZOOM button until the icon turns off.

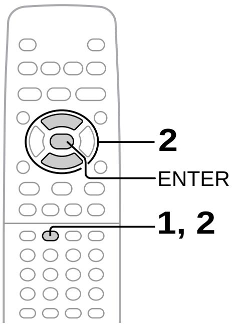
Notes

- Some discs may not respond to zoom feature.
- During some scenes, the buttons may not work as described.
- Zooming does not work on subtitles or menus included on DVD video discs.
- While the icon is displayed, the ▲/▼/◄/► buttons cannot work on menus included on DVD video discs. If you want to view the menus, turn off the icon.
- The magnification level varies depending on the picture size you select. 40

Selecting the Picture Enhancement (E.P.M.)*

You can easily switch the picture enhancement to your preference.

*E.P.M.: Enhanced Picture Mode

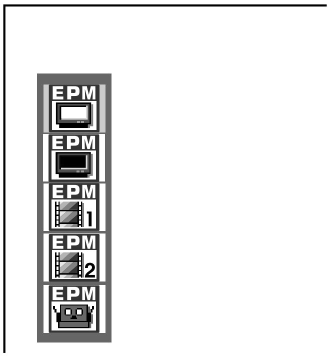


DVD VCD CD Selecting the picture enhancement

1 **Press E.P.M.**

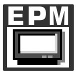
E.P.M.

The picture enhancement selection appears.

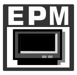


2 **Select the picture enhancement by pressing E.P.M. or ▲/▼.**

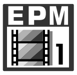
Each time you press the button, the picture enhancement changes.



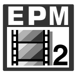
Light:
Brighter than in “Normal”.



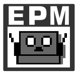
Normal:
Standard black level.



Movie 1:
To raise brightness to clarify details.



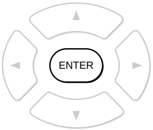
Movie 2:
To deepen colours.



Animation:
To raise contrast enhancing colours.

■ To turn off the picture enhancement selection

Press **ENTER**.



Alternatively leave the DVD video player unoperated for about 5 seconds after having made the selection.

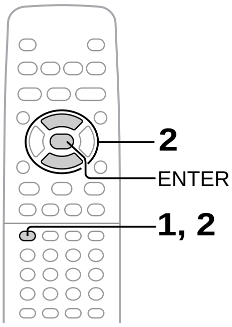
Note

Actual effects to pictures may vary depending on the TV. Make the selection to your preference.

Selecting the Sound Enhancement (E.A.M.*)

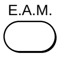
You can easily switch the sound enhancement to your preference.

*E.A.M.: Enhanced Audio Mode

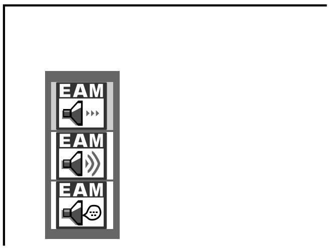


DVD VCD CD Selecting the sound enhancement

1 Press E.A.M.



The sound enhancement selection appears.



2 Select the sound enhancement by pressing E.A.M. or ▲ / ▼.

Each time you press the button, the sound enhancement changes.

EAM Normal:
Normal sound.

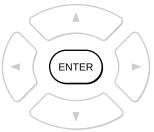
EAM 3D (N-2-2):
To obtain expansive virtual surround sound effects from just two speakers.

EAM Dialogue:
To control dynamic range to make dialogues easier to hear (only when playing a DVD video disc recorded on the Dolby Digital recording system).

- To use this enhancement on sounds output from the BITSTREAM/PCM AUDIO OUT jack, be sure to set “Audio Out Select” to “PCM”. 41

■ To turn off the audio enhancement selection

Press **ENTER**.



Alternatively leave the DVD video player unoperated for about 5 seconds after having made the selection.

Notes

- Actual effects to sounds may vary depending on the speakers. Make the selection to your preference.
- Actual effects to sounds may vary depending on the disc.
- When the DVD video player is connected to an amplifier equipped with Dolby Pro Logic Surround, select “Normal”. Otherwise, Dolby Pro Logic Surround may function differently than usual.
- Selecting “Dialogue” disables “Dynamic Range Control” function 41.

Spatializer® 3-Dimensional Sound Processing provided by Desper Products. Inc.
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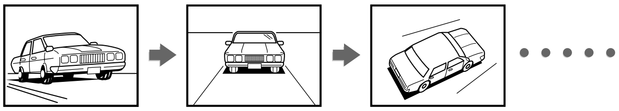
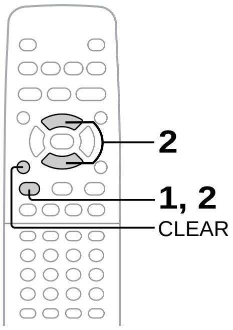
Selecting the Camera Angle

If the scene was recorded from multiple angles, you can easily change the camera angle of the scene you are watching.



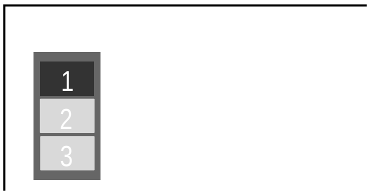


DVD Changing the camera angle

1 Press ANGLE while playing a scene recorded with multiple angles.

ANGLE

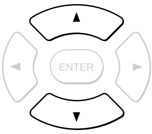
While playing a scene recorded with multiple angles, the angle icon (🎥) flashes in the DVD display.
Press the ANGLE button while the angle icon is flashing.



2 Press ANGLE or ▲ / ▼ while the angle number is displayed on the TV screen.

ANGLE

Each time you press the ANGLE button, the camera angle changes.



You can change the camera angle directly by pressing the number buttons corresponding to its angle number instead of using the ▲ / ▼ buttons.

■ To turn off the angle number display

Press **CLEAR**.

CLEAR

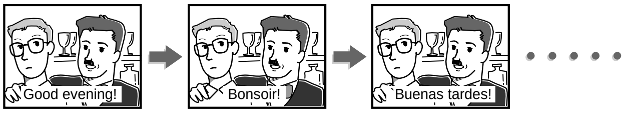
⊖

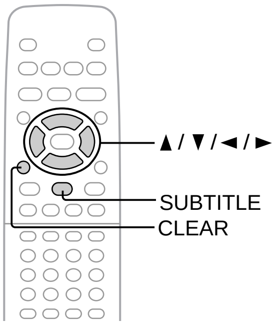
Notes

- You can change the camera angle during still playback. The camera angle changes to the new setting when you resume normal playback.
- If you pause a picture immediately after changing a camera angle, the resumed playback picture may not display the new camera angle.

Selecting Subtitles

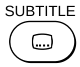
You can display subtitles on the TV screen and select a subtitle language from those included on the DVD video disc.


Good evening!
Bonsoir!
Buenas tardes!



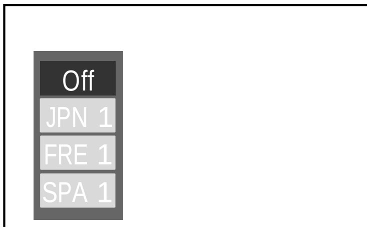
DVD Selecting a subtitle language

1 Press SUBTITLE during playback.



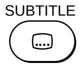
The current subtitle setting is displayed.

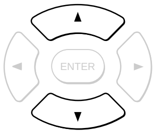
e.g.


Off
JPN 1
FRE 1
SPA 1

The abbreviation of the language appears instead of the language name. Refer to the list of languages and their abbreviations. 47

2 Press SUBTITLE or ▲ / ▼ while the subtitle setting is displayed on the TV screen.



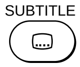


Each time you press the SUBTITLE button, the subtitle languages included on the DVD video disc change.

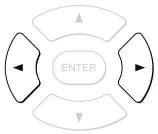
To turn off the subtitle setting display, press the CLEAR or ENTER button.

■ To turn subtitles on or off

1 Press **SUBTITLE** during playback.



2 Press ◄ / ► while the subtitle setting is displayed on the TV screen, to select "On" or "Off."



Notes

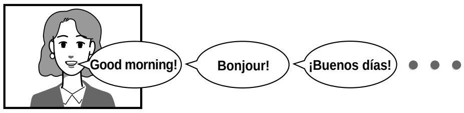
- Some DVD video discs are set to display subtitles automatically, and you cannot turn them off even if you set the subtitle function to off.
- During some scenes, the subtitles may not appear immediately after you select "On."
- Some DVD video discs will allow you to make subtitle selections and turn subtitles on or off only via the disc menu.

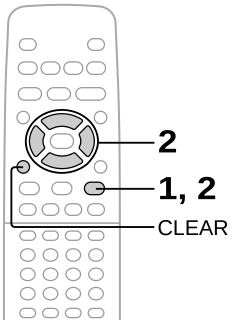
Notes

- When you turn on the DVD video player or replace a disc, the player returns to the initial default setting 42.
  When you select a subtitle language which is not included on the disc, the DVD video player plays a prior language programmed on the disc.
- During some scenes, the subtitles may not appear immediately after you change the subtitle language.

Selecting a Language

You can select a preferred language and sound recording system from those included on the DVD video disc.


Good morning!
Bonjour!
¡Buenos días!
• • •



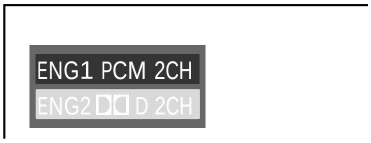
DVD VCD Selecting a playback audio setting

1 Press AUDIO during playback.

AUDIO

The current audio setting is displayed.

e.g.



ENG1 PCM 2CH

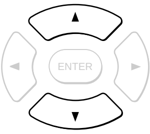
ENG2 DD D 2CH

The abbreviation of the language appears instead of the language name. Refer to the list of languages and their abbreviations. 47

2 Press AUDIO or ▲ / ▼ while the audio setting is displayed on the TV screen.

AUDIO

Each time you press the AUDIO button, the audio settings included on the DVD video disc change.



If you press the ◄ / ► buttons, you can select output sound format. 41

To turn off the audio setting display, press the CLEAR button.

Selecting sound channels of VIDEO CDs

You can switch left and right channels by pressing the **AUDIO** button repeatedly during playback.

AUDIO

Notes

- When you turn on the DVD video player or replace a disc, player returns to the initial default setting 42.
  If you select a sound track which is not included on the disc, the DVD video player plays a prior sound track programmed on the disc.
- Some discs allow you to change audio selections only via the disc menu. If this is the case, press the MENU button and choose the appropriate language from the selections on the disc menu.

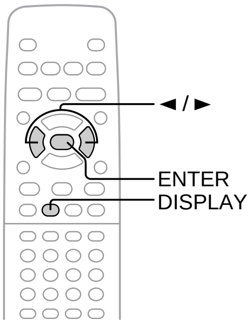
Output sound conversion table (sampling frequency/quantization bit)

Discs	Recording system		Audio selection from the menu 38 41 and output jacks on the rear panel					
			"Bitstream"		"Analog 2ch"		"PCM"	
			BITSTREAM/PCM jack	ANALOG AUDIO OUT jacks	BITSTREAM/PCM jack	ANALOG AUDIO OUT jacks	BITSTREAM/PCM jack	ANALOG AUDIO OUT jacks
DVD video discs	Dolby Digital		Bitstream	48 kHz/20 bit	Bitstream	48 kHz/20 bit	48 kHz/16 bit	48 kHz/20 bit
	Linear PCM	48 kHz/16 bit	48 kHz/16 bit	48 kHz/16 bit	48 kHz/16 bit	48 kHz/16 bit	48 kHz/16 bit	48 kHz/16 bit
		48 kHz/20 bit	48 kHz/16 bit	48 kHz/20 bit	48 kHz/16 bit	48 kHz/20 bit	48 kHz/16 bit	48 kHz/20 bit
		48 kHz/24 bit	48 kHz/16 bit	48 kHz/24 bit	48 kHz/16 bit	48 kHz/24 bit	48 kHz/16 bit	48 kHz/24 bit
		96 kHz/16 bit	48 kHz/16 bit	48 kHz/16 bit	—	96 kHz/16 bit	48 kHz/16 bit	48 kHz/16 bit
		96 kHz/20 bit	48 kHz/16 bit	48 kHz/20 bit	—	96 kHz/20 bit	48 kHz/16 bit	48 kHz/20 bit
		96 kHz/24 bit	48 kHz/16 bit	48 kHz/24 bit	—	96 kHz/24 bit	48 kHz/16 bit	48 kHz/24 bit
	DTS		Bitstream	—	Bitstream	—	—	—
	MPEG1, MPEG2		Bitstream	48 kHz/16 bit	Bitstream	48 kHz/16 bit	48 kHz/16 bit	48 kHz/16 bit
VIDEO CDs	MPEG1		44.1 kHz/16 bit	44.1 kHz/16 bit	44.1 kHz/16 bit	44.1 kHz/16 bit	44.1 kHz/16 bit	44.1 kHz/16 bit
Audio CDs	Linear PCM 44.1 kHz/16 bit		44.1 kHz/16 bit	44.1 kHz/16 bit	44.1 kHz/16 bit	44.1 kHz/16 bit	44.1 kHz/16 bit	44.1 kHz/16 bit
	DTS		Bitstream	(Noise)	Bitstream	(Noise)	Bitstream	(Noise)

▨ : 3D (N-2-2) sound enhancement can function.

Operating in the On-screen Display Mode

When you turn on the on-screen display, you can view information on operational status and access the features and settings on-screen.



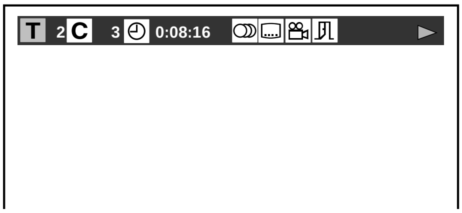
DVD VCD CD Operating in the on-screen display mode

Press DISPLAY.

DISPLAY

The following display appears.
Each time you press the DISPLAY button, the on-screen display changes as follows.
If you press the ◄ / ► buttons to select an icon, then press the ENTER button, you can access the feature.
When you select an icon (*), no need to press the ENTER button.
See the pages in ☐ for details on the features.

e.g. When playing a DVD video disc



T * : Title number (Track number)
To locate a title or track using the number. 24

C * : Chapter number
To locate a chapter using the number. 25

◷ * : Elapsed time of the current title
To enter the time to locate a desired location. 26

: Audio setting 35

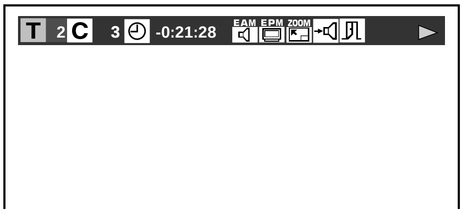
: Subtitle setting 34

: Angle setting 33

: To turn off the display.

Press DISPLAY again.

↓



T * : Title number (Track number)
To locate a title or track using the number. 24

C * : Chapter number
To locate a chapter using the number. 25

◷ * : Remaining time of the current title
To enter the time to locate a desired location. 26

EAM : E.A.M. (Enhanced Audio Mode) setting 32

EPM : E.P.M. (Enhanced Picture Mode) setting 31

ZOOM : To zoom a picture. 30

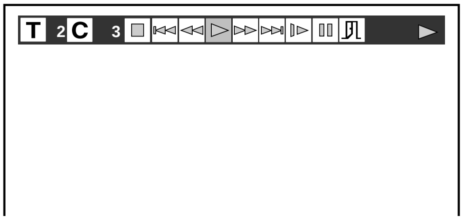
: "Audio Out Select" setting 41
BST: Bitstream 2CH: Analog 2ch PCM: PCM

: To turn off the display.

Press DISPLAY again.

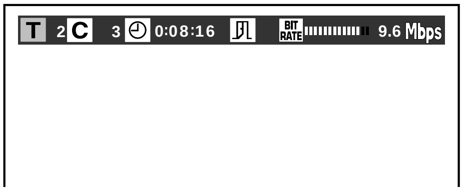
↓

(continued)



- **T** * : Title number (Track number)
  To locate a title or track using the number. 24
- **C** * : Chapter number
  To locate a chapter using the number. 25
- □ : To stop playback. 21
- ⏮ : Playback starts from the beginning of the current chapter or track. 25
- ⏪ : Fast reverse playback 22
- ▷ : To start playback. 20
- ⏩ : Fast forward playback 22
- ⏭ : To locate succeeding chapters or tracks. 25
- ▷ : To slow motion playback. 23
- ⏸ : To pause playback. 21
- ⎋ : To turn off the display.

Press DISPLAY again.



OFF
To turn off the on-screen display, press DISPLAY again.

The on-screen display will vary depending on the disc.

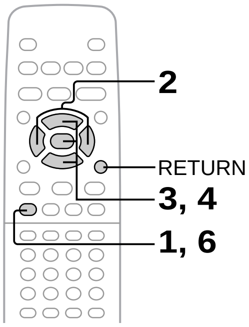
DVD : Data transfer rate (Mbit/s)
= Amount of picture, sound and subtitle data in the DVD video disc transferred per second.
The larger the value is, the more data processed, but this does not necessarily insure better picture quality.

CD : CD-Text
Displays CD-Text data if included on the audio CDs. (Some letters may not be displayed properly depending on the disc.)

VCD : The on-screen display turns off.

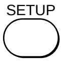
Customizing the Function Settings

You can change the default settings to customize performance to your preference.

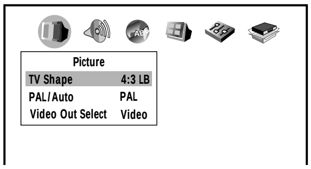


DVD VCD CD Setting procedure

1 Press SETUP during stop.



The following on-screen display appears.

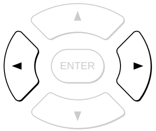


Picture

TV Shape 4:3 LB
PAL/Auto PAL
Video Out Select Video

2 Press ◄ / ► to select a symbol for the setting you want to change.

(See the next page.)



Picture performance settings

Output sound settings

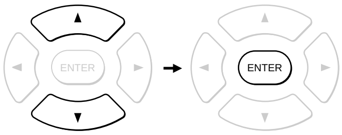
Language settings

Display settings

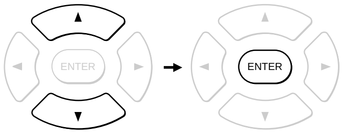
Operational settings

Initial settings

3 Press ▲ / ▼ to select the setting you want to change, then press ENTER.



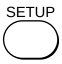
4 Change the selection by ▲ / ▼ or other buttons, by referring to the corresponding pages 39, then press ENTER.



5 Repeat steps 3 and 4 to change other settings.

To select another operation, go back to step 2.

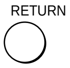
6 Press SETUP.



The on-screen display disappears.

■ To return to the previous display

Press **RETURN**.



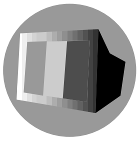
Notes

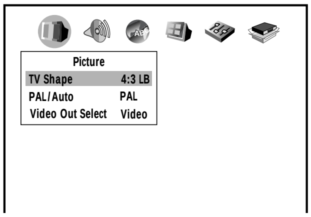
- The on-screen display disappears when you press the SETUP button.
- The SETUP button can function even during normal playback, however some operations may be inaccessible, and a message will appear. In this case, try again after playback is stopped.

Setting		Details	Page
TV Shape	DVD	**To select a picture size according to the aspect ratio of your TV.**	**40**
PAL/Auto	DVD VCD	**To select the video system of a disc.**	**40**
Video Out Select	DVD VCD	**To select the video output type corresponding to your TV system**	**40**
Audio Out Select	DVD VCD CD	**To select an output sound format corresponding to your system connection.**	**41**
Dynamic Range Control	DVD	**To turn on or off a function that makes faint sounds easier to hear even if you lower the volume during late hours playback.**	**41**
Karaoke Vocal	DVD	**To turn on or off the vocal output during DVD KARAOKE disc playback.**	**41**
On-Screen Language	DVD VCD CD	**To select a preferred language for on-screen displays.**	**42**
Disc Menu Language	DVD	**To select a preferred language for disc menus.**	**42**
Audio Language	DVD	**To select a preferred language for the sound track.**	**42**
Subtitle Language	DVD	**To select a preferred language for subtitles.**	**42**
On-Screen Displays	DVD VCD CD	**To turn on or de-activate the operational status display on the TV screen.**	**43**
Background	DVD VCD CD	**To select the background colour or background picture.**	**43**
Screen Saver	DVD	**To turn the screen saver on or off.**	**43**
Pause/Still	DVD	**To select the resolution of still pictures. (Field/Frame)**	**44**
Parental Lock	DVD	**To turn the parental lock function on or off.**	**44**
Title Stop	DVD	**To turn on or off a feature that automatically stops playback after a title has been viewed.**	**45**
PBC	VCD	**To use the menu screen when playing a PBC-controllable VIDEO CD.**	**45**
On-screen Language **TV Shape** **Audio Out Select**	DVD VCD CD	**To install the initial system setting.**	**46**

Customizing the Function Settings (continued)

Setting details



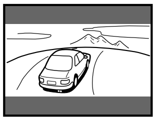


Picture

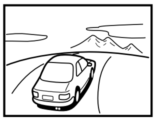
TV Shape	4:3 LB
PAL/Auto	PAL
Video Out Select	Video

TV Shape DVD

4:3 Letterbox: Select when a standard 4:3 TV is connected.
Displays theatrical images with masking bars above and below the picture.



4:3 Normal: Select when a standard 4:3 TV is connected.
Displays pictures cropped to fill your TV screen. Either or both sides of the picture are cut off.



16:9 Widescreen: Select when a 16:9 wide TV is connected.

Notes

- The displayable picture size is preset on the DVD video disc. Therefore, the playback picture of some DVD video discs may not conform to the picture size you select.
- When you play DVD video discs recorded in the 4:3 picture size only, the playback picture always appears in the 4:3 picture size regardless of the TV shape setting.
- If you select “16:9 Widescreen” and you own a 4:3 TV set, the DVD playback picture will be horizontally distorted during playback. Images will appear to be horizontally compressed. Always be sure that your TV shape conforms to the actual TV in use.

PAL/Auto DVD VCD

PAL: To play a PAL disc. Connect a PAL TV to view a picture.

Auto: The DVD video player automatically identifies PAL or NTSC video system of a disc. Connect a multisystem TV (PAL/NTSC compatible) to view a picture.
A playback picture may be distorted when detected a signal change between PAL and NTSC on the disc.

Video Out Select DVD VCD

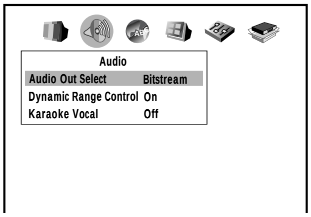
Video: Select when connected to a normal TV. 16

S Video: Select when connected to a TV compatible with S video signals. 16 17

RGB: Select when connected to an RGB monitor. 16

Notes

- When you connect a TV equipped with the component video inputs, select “Video” or “S Video”. 16
- If the on-screen display disappears immediately after you select “RGB”, you can restore it by connecting the DVD player using the VIDEO OUT (yellow) jack.



Audio

Audio Out Select	Bitstream
Dynamic Range Control	On
Karaoke Vocal	Off

Audio Out Select DVD VCD CD

Select the output sound format corresponding to your system connection.
For details of sound recording systems, see 35.

Bitstream:	Select when connected to an amplifier equipped with a Dolby Digital, DTS, MPEG1 or MPEG2 decoder. 18 19 The DVD video player outputs digital audio information in the bitstream format when you play a DVD video disc recorded on the Dolby Digital, DTS, MPEG1 or MPEG2 recording system.
Analog 2ch:	Select when connected to a TV, or Dolby Pro Logic or stereo system via the analog audio jacks. 16 17 18
PCM:	Select when connected to a 2 channel digital stereo amplifier. 19 The DVD video player outputs sounds in the PCM 2ch format when you play a DVD video disc recorded on the Dolby Digital, MPEG1 or MPEG2 recording system.

Dynamic Range Control DVD

Off: Full dynamic range is maintained.
On: Dynamic range is reduced.

Notes

- This function works only during playback of Dolby Digital recorded discs.
- The level of Dynamic Range Reduction may differ depending on the DVD video disc.

Karaoke Vocal DVD

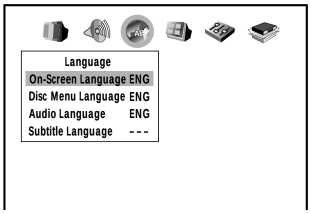
Off: The primary vocal is not output.
On: The primary vocal is output when it is recorded on the disc.

Notes

- The vocal output feature is used during playback of Dolby Digital (multi-channel) recorded DVD KARAOKE discs. This feature allows you to turn off vocal audio tracks, or restore them for background accompaniment.
- When playing KARAOKE, connect appropriate audio equipment such as an amplifier to the DVD video player.

Customizing the Function Settings (continued)

Setting details


Language
On-Screen Language ENG
Disc Menu Language ENG
Audio Language ENG
Subtitle Language - - -

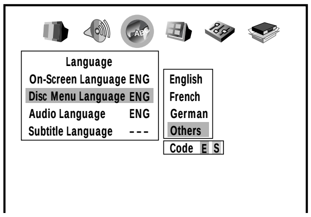
On-Screen Language DVD VCD CD

English:	To view on-screen displays in English.
Français:	To view on-screen displays in French.
Deutsch:	To view on-screen displays in German.

Disc Menu Language DVD

English:	To display disc menus in English.
French:	To display disc menus in French.
German:	To display disc menus in German.
Others:	To make a further choice. After pressing the ENTER button, follow steps 1) - 4) below.

1) Obtain the abbreviation of the preferred language from the list 47.
2) Select the first character by pressing the ▲ / ▼ buttons.
3) Press the ◄ / ► buttons to shift and select the second character by pressing the ▲ / ▼ buttons.


Language
On-Screen Language ENG
Disc Menu Language ENG
Audio Language ENG
Subtitle Language - - -
English
French
German
Others
Code E S

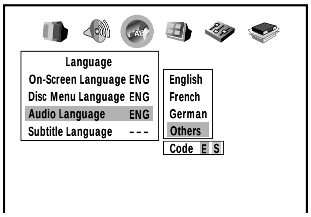
4) Press the ENTER button.

Note
Some DVD video discs may not include your pre-selected language. In this case, the DVD video player automatically displays disc menus consistent with the disc's initial language setting.

Audio Language DVD

English:	To play sound tracks in English.
French:	To play sound tracks in French.
German:	To play sound tracks in German.
Others:	To make a further choice. After pressing the ENTER button, follow steps 1) - 4) below.

1) Obtain the abbreviation of the preferred language from the list 47.
2) Select the first character by pressing the ▲ / ▼ buttons.
3) Press the ◄ / ► buttons to shift and select the second character by pressing the ▲ / ▼ buttons.


Language
On-Screen Language ENG
Disc Menu Language ENG
Audio Language ENG
Subtitle Language - - -
English
French
German
Others
Code E S

4) Press the ENTER button.

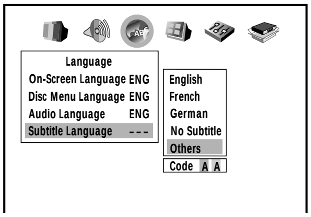
Note
Some DVD video discs may be played in a different language than you selected. A prior language may be programmed on the disc.

Subtitle Language DVD

English:	To display subtitles in English.
French:	To display subtitles in French.
German:	To display subtitles in German.
No Subtitle:	To disable subtitles.
Others:	To make a further choice. After pressing the ENTER button, follow steps 1) - 4) below.

1) Obtain the abbreviation of the preferred language from the list 47.
2) Select the first character by pressing the ▲ / ▼ buttons.

3) Press the ◄ / ► buttons to shift and select the second character by pressing the ▲ / ▼ buttons.



Language

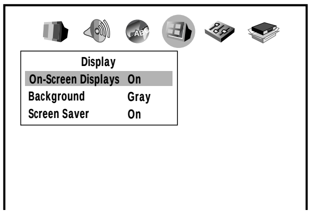
On-Screen Language	ENG
Disc Menu Language	ENG
Audio Language	ENG
Subtitle Language	- - -

English
French
German
No Subtitle
Others
Code A A

4) Press the ENTER button.

Notes

- Some DVD video discs may be set to display subtitles in a different language than you selected. A prior subtitle language may be programmed on the disc.
- Some DVD video discs allow you to change subtitle selections only via the disc menu. If this is the case, press the MENU button and choose the appropriate subtitle language from the selection on the disc menu.



Display

On-Screen Displays	On
Background	Gray
Screen Saver	On

On-Screen Displays DVD VCD CD

Off: Operational modes (e.g. “ ❚❚ ”, “ ▷▷ ”) are not displayed.

On: Operational modes (e.g. “ ❚❚ ”, “ ▷▷ ”) are displayed on-screen.

Background DVD VCD CD

Blue:	Blue background.
Gray:	Gray background.
Picture:	To use the picture which appears when you turn on the DVD video player as a background.
Jacket:	To use the jacket picture included on some discs as a background. If it is not included, a gray background will be substituted.

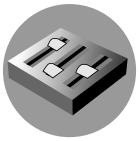
Screen Saver DVD

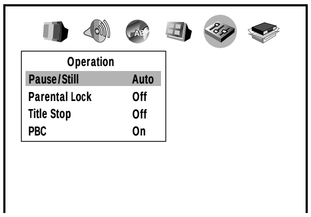
Off: The screen saver is disengaged.

On: The screen saver operates.

Customizing the Function Settings (continued)

Setting details





Operation

Pause/Still	Auto
Parental Lock	Off
Title Stop	Off
PBC	On

Pause/Still DVD

Auto:	For normal use. Still and fast motion images can be paused.
Frame:	The resolution of still pictures is improved, so that you can make a motionless picture more clearer when you pause it.

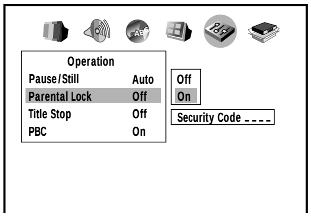
Parental Lock DVD

DVD video discs equipped with the parental lock function are rated according to their content. The contents allowed by a parental lock level and the way a DVD video disc can be controlled may vary from disc to disc. For example, if the disc allowed you could edit out violent scenes unsuitable for children and replace them with more suitable scenes, or lock out playback of the disc altogether.

- DVD video discs may or may not respond to the parental lock settings. This is not a defect in the DVD video player. Make sure this function works with your DVD video discs.

Off: The parental lock feature does not function. After pressing the ENTER button, follow step 1) below.

On: To activate the parental lock feature or change the settings. After pressing the ENTER button, follow steps 1) - 3) below.



Operation

Pause/Still	Auto
Parental Lock	Off
Title Stop	Off
PBC	On

Off
On

Security Code _ _ _ _

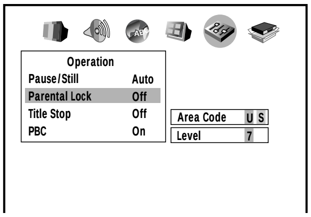
1) Press the number buttons to create a personal 4-digit security code, then press the ENTER button.
   If you make a mistake before pressing the ENTER button, press the CLEAR button and enter your 4-digit security code again.

2) Enter the code of a country/area whose standards were used to rate the DVD video disc, referring to the list below.

Country/Area	Code
AUSTRALIA	AU
BELGIUM	BE
CANADA	CA
CHINA	CN
CHINA HONG KONG	HK
DENMARK	DK
FINLAND	FI
FRANCE	FR
GERMANY	DE
INDONESIA	ID
ITALY	IT
JAPAN	JP
MALAYSIA	MY
NETHERLANDS	NL
NORWAY	NO
PHILIPPINES	PH
RUSSIAN FEDERATION	RU
SINGAPORE	SG
SPAIN	ES
SWEDEN	SE
SWITZERLAND	CH
TAIWAN	TW
THAILAND	TH
UNITED KINGDOM	GB
UNITED STATES	US

a) Select the first character by pressing the ▲ / ▼ buttons.
b) Press the ◄ / ► buttons to shift and select the second character by pressing the ▲ / ▼ buttons.
c) Press the ENTER button.

3) Press the ▲ / ▼ buttons to select the parental lock level, then press the ENTER button.



Operation

Pause/Still	Auto
Parental Lock	Off
Title Stop	Off
PBC	On

Area Code	U S
Level	7

You cannot play DVD video discs rated higher than the level you selected unless you cancel the parental lock function.
For example, when you select level 7, discs rated higher than level 7 are locked out and cannot be played.

The parental lock level is equivalent to the following USA movie ratings.

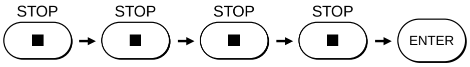
Level 7: NC-17
Level 6: R
Level 4: PG 13
Level 3: PG
Level 1: G

The parental lock levels for other countries/areas than U.S. are included for future use. Check the appropriate parental lock level when you buy a DVD video disc equipped with the parental lock feature in the future.

■ To change the parental lock level
Follow steps 1) - 3).

■ To change your 4-digit security code

1) After selecting “On” or “Off,” press the STOP button four times, then press the ENTER button.



The 4-digit security code is cleared.

2) Press the number buttons to create a new 4-digit security code.
3) Press the ENTER button.

Title Stop DVD

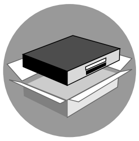
Off: The DVD video player continues after playback of a title is completed.
On: The DVD video player stops after playback of a title is completed.

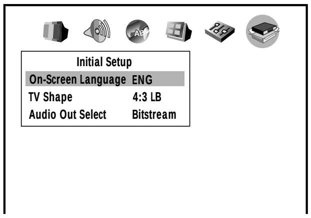
PBC VCD

Off: When playing a VIDEO CD without using the menu.
On: To use the menu when playing a PBC-featured VIDEO CD.

Customizing the Function Settings (continued)

Setting details



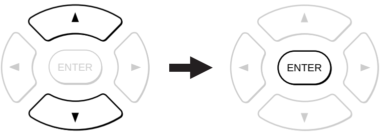


Initial Setup

On-Screen Language	ENG
TV Shape	4:3 LB
Audio Out Select	Bitstream

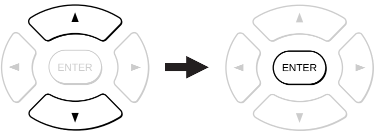
Initial Setup DVD VCD CD

1) Press the ▲ / ▼ buttons to select “On-Screen Language,” and press the **ENTER** button.



2) Select a language pressing the ▲ / ▼ buttons, and press the **ENTER** button.

See page 42, “On-Screen Language.”



3) Make your selection in the same manner as step 1) then step 2).

See page 40, “TV Shape.”
See page 41, “Audio Out Select.”

Table of Languages

Table of languages and their abbreviations

Abbreviation	Language
– – –	No alternate language
CHI (ZH)	Chinese
DUT (NL)	Dutch
ENG (EN)	English
FRE (FR)	French
GER (DE)	German
ITA (IT)	Italian
JPN (JA)	Japanese
KOR (KO)	Korean
MAY (MS)	Malay
SPA (ES)	Spanish
AA	Afar
AB	Abkhazian
AF	Afrikaans
AM	Amharic
AR	Arabic
AS	Assamese
AY	Aymara
AZ	Azerbaijani
BA	Bashkir
BE	Belorussian
BG	Bulgarian
BH	Bihari
BI	Bislama
BN	Bengali, Bangla
BO	Tibetan
BR	Breton
CA	Catalan
CO	Corsican
CS	Czech
CY	Welsh
DA	Danish
DZ	Bhutani
EL	Greek
EO	Esperanto
ET	Estonian
EU	Basque
FA	Persian
FI	Finnish
FJ	Fiji
FO	Faroese
FY	Frisian
GA	Irish
GD	Scottish Gaelic
GL	Galician

Abbreviation	Language
GN	Guarani
GU	Gujarati
HA	Hausa
HI	Hindi
HR	Croatian
HU	Hungarian
HY	Armenian
IA	Interlingua
IE	Interlingue
IK	Inupiak
IN	Indonesian
IS	Icelandic
IW	Hebrew
JI	Yiddish
JW	Javanese
KA	Georgian
KK	Kazakh
KL	Greenlandic
KM	Cambodian
KN	Kannada
KS	Kashmiri
KU	Kurdish
KY	Kirghiz
LA	Latin
LN	Lingala
LO	Laotian
LT	Lithuanian
LV	Latvian, Lettish
MG	Malagasy
MI	Maori
MK	Macedonian
ML	Malayalam
MN	Mongolian
MO	Moldavian
MR	Marathi
MT	Maltese
MY	Burmese
NA	Nauru
NE	Nepali
NO	Norwegian
OC	Occitan
OM	(Afan) Oromo
OR	Oriya
PA	Panjabi
PL	Polish
PS	Pashto, Pushto

Abbreviation	Language
PT	Portuguese
QU	Quechua
RM	Rhaeto-Romance
RN	Kirundi
RO	Rumanian
RU	Russian
RW	Kinyarwanda
SA	Sanskrit
SD	Sindhi
SG	Sango
SH	Serbo-Croatian
SI	Singhalese
SK	Slovak
SL	Slovenian
SM	Samoan
SN	Shona
SO	Somali
SQ	Albanian
SR	Serbian
SS	Siswati
ST	Sesotho
SU	Sundanese
SV	Swedish
SW	Swahili
TA	Tamil
TE	Telugu
TG	Tajik
TH	Thai
TI	Tigrinya
TK	Turkmen
TL	Tagalog
TN	Setswana
TO	Tongan
TR	Turkish
TS	Tsonga
TT	Tatar
TW	Twi
UK	Ukrainian
UR	Urdu
UZ	Uzbek
VI	Vietnamese
VO	Volapük
WO	Wolof
XH	Xhosa
YO	Yoruba
ZU	Zulu

Before Calling Service Personnel

Check the following guide for the possible cause of a problem before contacting service.

Symptoms and correction

Symptom	Cause	Correction	Page
No power.	• The power plug is disconnected.	• Connect the power plug securely into the wall outlet.	**16**
The DVD video player turned off by itself.	• The automatic power off function turned the unit off.	• Press the PLAY button.	**21**
No picture.	• The TV is not set to receive DVD signal output.	• Select the appropriate video input mode on the TV so the picture from the DVD video player appears on the TV screen.	**20**
	• The video cable is not connected securely.	• Connect the video cable securely into the appropriate jacks.	**16, 17**
No sound.	• The equipment connected with the audio cable is not set to receive DVD signal output.	• Select the correct input mode of the audio receiver so you can listen to the sound from the DVD video player.	**20**
	• The audio cable is not connected securely.	• Connect the audio cable securely into the appropriate jacks.	**16, 17 18, 19**
	• The audio receiver or TV is turned off.	• Turn on the equipment connected with the audio cable.	**20**
	• The setting of output sound format is incorrect.	• Select the proper audio setting.	**35, 38 41**
The playback picture has occasional distortion.	• The disc is dirty.	• Eject the disc and clean it.	**9**
	• It is in fast forward or fast reverse playback.	• Sometimes a small amount of picture distortion may appear. This is not a malfunction.	**–**
Brightness is unstable or noises are present in the playback pictures.	• The effect of copy protection.	• Connect the DVD video player directly to the TV. Avoid connecting the DVD video player to a VCR or TV/VCR combination.	**16**
The DVD video player does not start playback.	• No disc is inserted.	• Insert a disc.	**20**
	• An unplayable disc is inserted.	• Insert a playable disc. (Check the disc type and colour system.)	**10**
	• The disc is placed upside down.	• Place the disc with the playback side down.	**20**
	• The disc is not placed within the guide.	• Place the disc correctly inside the guide on the disc tray.	**20**
	• The disc is dirty.	• Clean the disc.	**9**
	• The parental lock function is set.	• Cancel the parental lock function or change the parental lock level.	**38, 44**
Playback does not follow the course of the disc's program.	• It is in the mode of repeat playback, memory playback, etc.	• These operations may prevent a proper progress of the contents.	**–**
Buttons do not work.	• Power supply fluctuations or other abnormalities such as static electricity may interrupt correct operations.	• Turn the power on or off with the Power button. Or disconnect the power plug and insert it into the wall outlet again.	**–**
The remote control does not work properly.	• The remote control is not pointed at the remote sensor of the DVD video player.	• Point the remote control at the remote sensor of the DVD video player.	**15**
	• The remote control is too far from the DVD video player.	• Operate the remote control within about 7 m.	**15**
	• The batteries in the remote control are exhausted.	• Replace the batteries with new ones.	**15**

Specifications

DVD video player / outputs / supplied accessories

DVD Video Player

Power supply	100-240 V AC, 50/60 Hz
Power consumption	18 W
Mass	2.4 kg
External dimensions	430 × 81 × 225 mm (W/H/D)
Signal system	PAL/3.58 NTSC
Laser	Semiconductor laser, wavelength 650/780 nm
Frequency range	DVD linear sound : 48 kHz sampling 4 Hz to 22 kHz 96 kHz sampling 4 Hz to 44 kHz
Signal-to-noise ratio	More than 112 dB
Audio dynamic range	More than 108 dB
Harmonic distortion	Less than 0.002 %
Wow and flutter	Below measurable level (less than ±0.001 % (W.PEAK))
Operating conditions	Temperature: 5 °C to 35 °C, Operation status: Horizontal

Outputs

Video output (SCART)	1.0 V (p-p), 75 Ω, SCART socket × 1
Video output (phono type)	1.0 V (p-p), 75 Ω, negative sync., pin jack × 1
S video output	(Y) 1.0 V (p-p), 75 Ω, negative sync., Mini DIN 4-pin × 1 (C) 0.3 V (p-p), 75 Ω
Component video output	(Y) 1.0 V (p-p), 75 Ω, negative sync., pin jack × 1 (P_B)/(P_R) 0.7 V (p-p), 75 Ω, pin jack × 2
Audio output (SCART)	2.0V (rms), 220 Ω, SCART socket × 1
Audio output (BITSTREAM/PCM OPTICAL)	Optical connector × 1
Audio output (BITSTREAM/PCM COAXIAL)	0.5V (p-p), 75 Ω, pin jack × 1
Audio output (ANALOG AUDIO OUT)	2.0 V (rms), 220 Ω, pin jacks (L, R) × 1

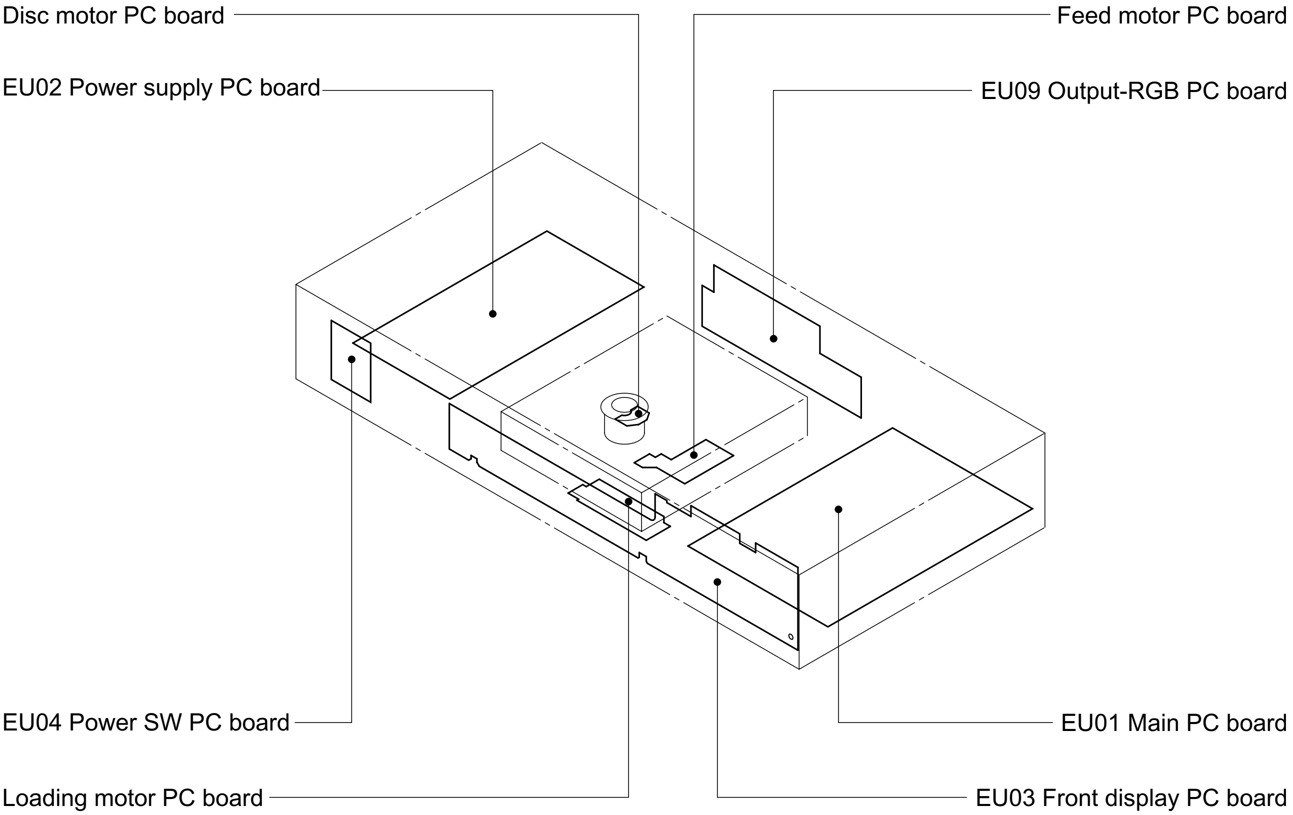
Supplied Accessories

Audio/video cable	1
Remote control (SE-R0047 or SE-R0049)	1
Batteries (R6)	2
Power cord	1

- Designs and specifications are subject to change without notice.

2. LOCATION OF MAIN PARTS AND MECHANISM PARTS

2-1. Location of Main Parts



Disc motor PC board
EU02 Power supply PC board
Feed motor PC board
EU09 Output-RGB PC board
EU04 Power SW PC board
Loading motor PC board
EU01 Main PC board
EU03 Front display PC board

Fig. 1-2-1

2-2. Location of Mechanism Parts

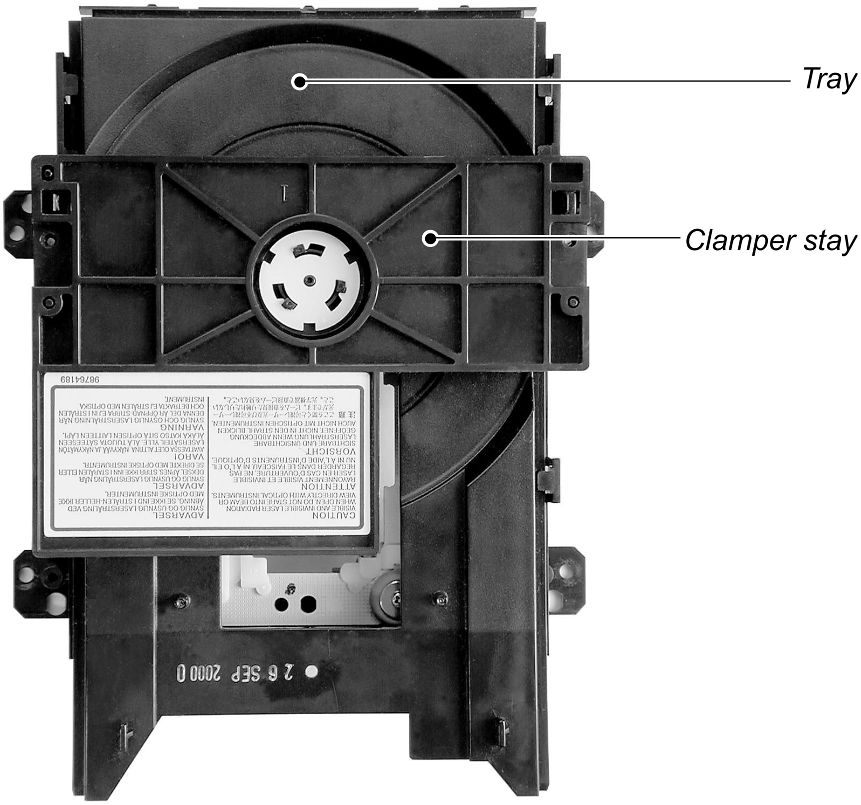

Tray
Clamper stay
2 6 SEP 2000 0

Fig. 1-2-2 Mechanism chassis assembly (Top side)

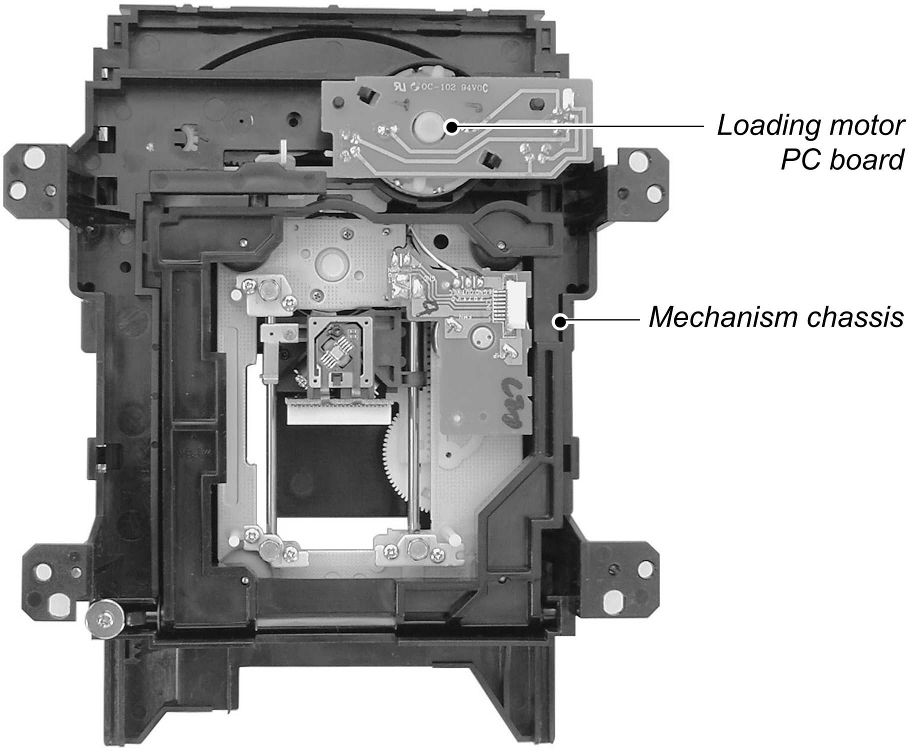

Loading motor
PC board
Mechanism chassis

Fig. 1-2-3 Mechanism chassis assembly (Bottom side)

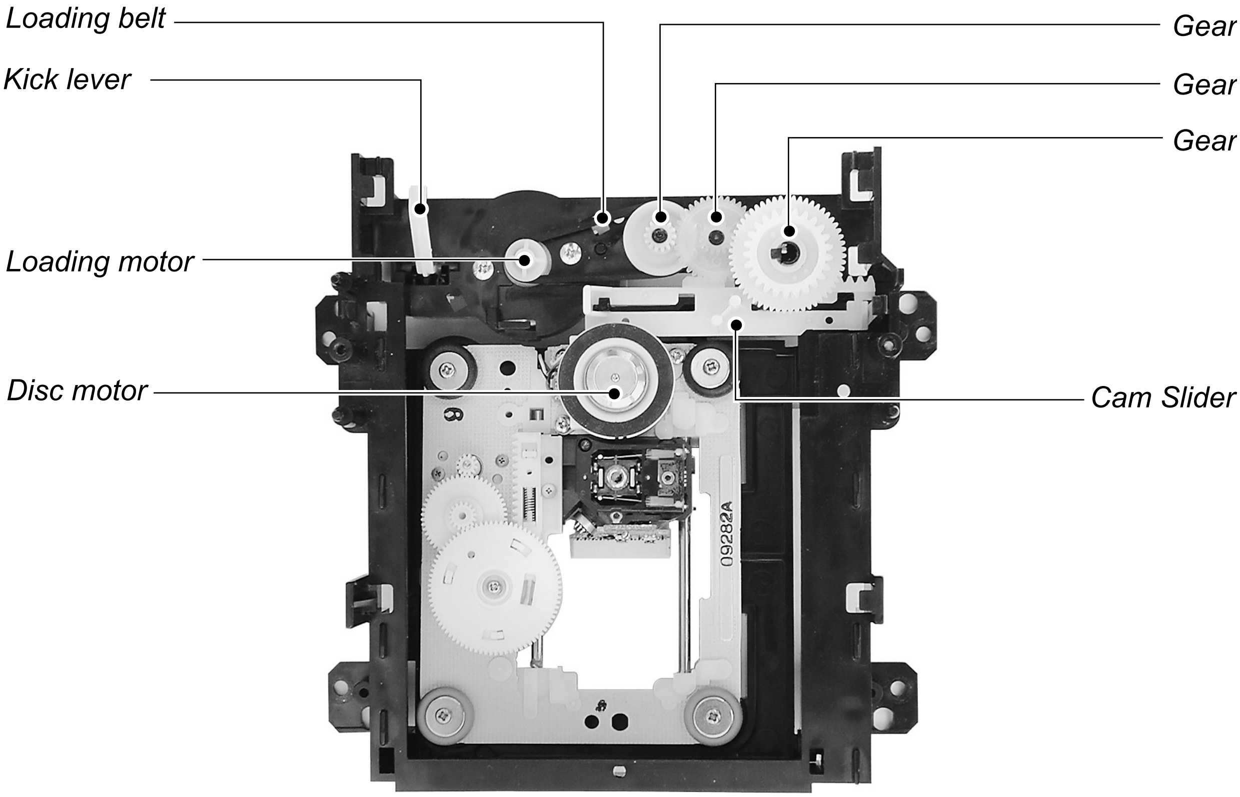

Loading belt
Kick lever
Loading motor
Disc motor
Gear
Gear
Gear
Cam Slider
09282A

Fig. 1-2-4 Mechanism chassis assembly (Internal side)

<Type A>

Note:

When servicing, note that this model has two types of the pickup mechanism assembly.

For the SD-210EB/EE/EL, only Type A is a service part. Type B can be changed to Type A pickup free from any performance problem.

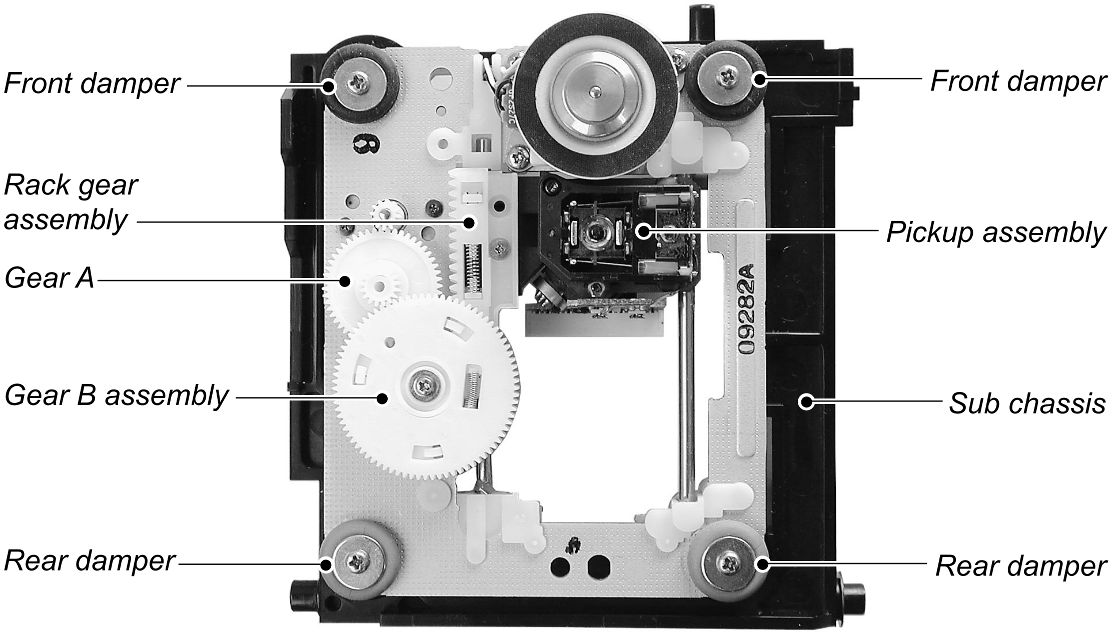

Front damper
Front damper
Rack gear assembly
Pickup assembly
Gear A
09282A
Gear B assembly
Sub chassis
Rear damper
Rear damper

Fig. 1-2-5 Pickup mechanism chassis assembly (Top side)

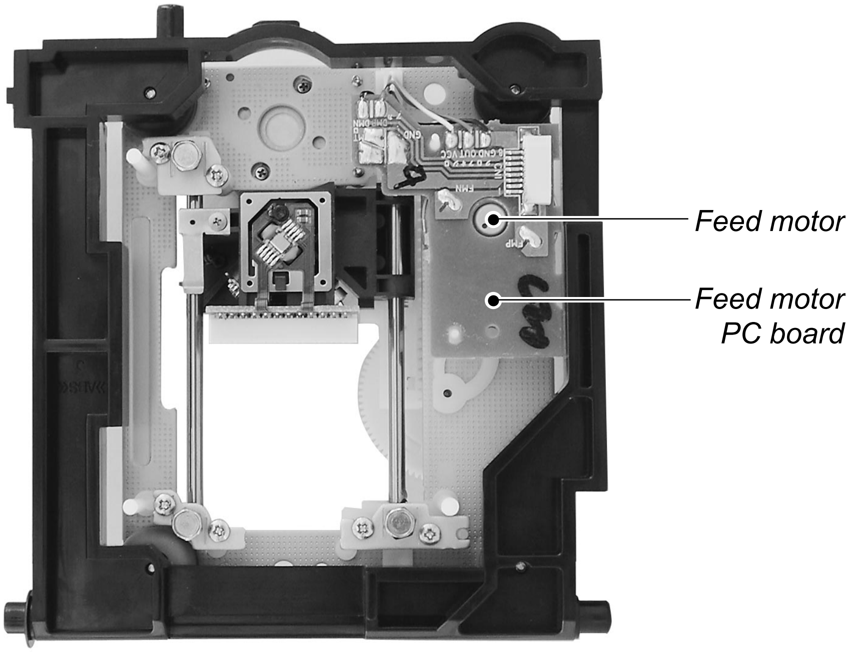

Feed motor
Feed motor PC board

Fig. 1-2-6 Pickup mechanism chassis assembly (Bottom side)

<Type B>

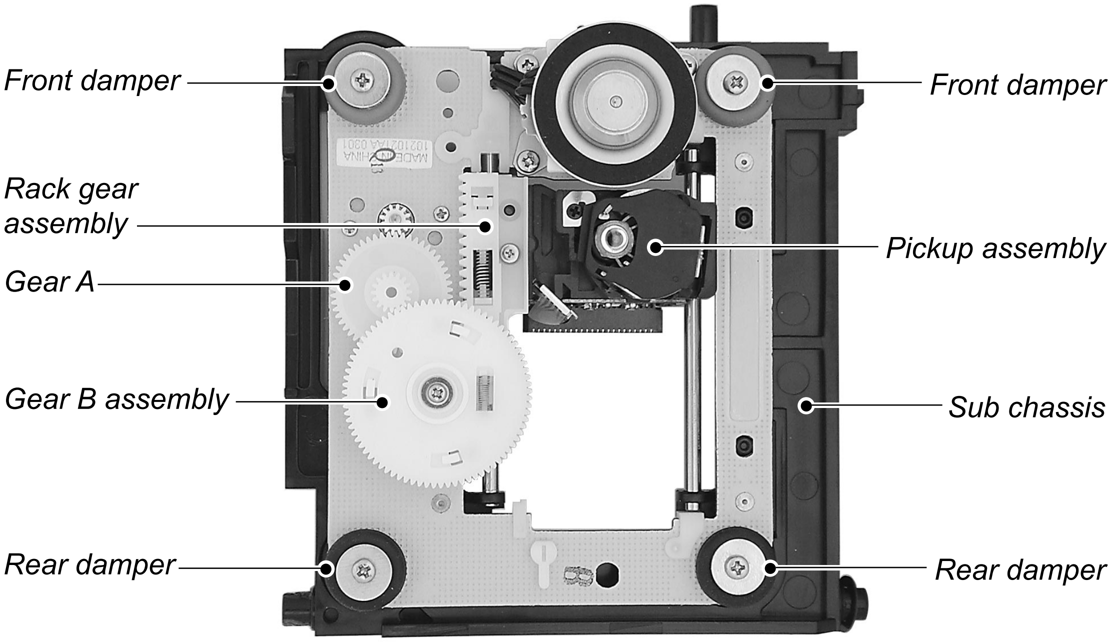

Front damper
Front damper
Rack gear assembly
Pickup assembly
Gear A
Gear B assembly
Sub chassis
Rear damper
Rear damper

Fig. 1-2-7 Pickup mechanism chassis assembly (Top side)

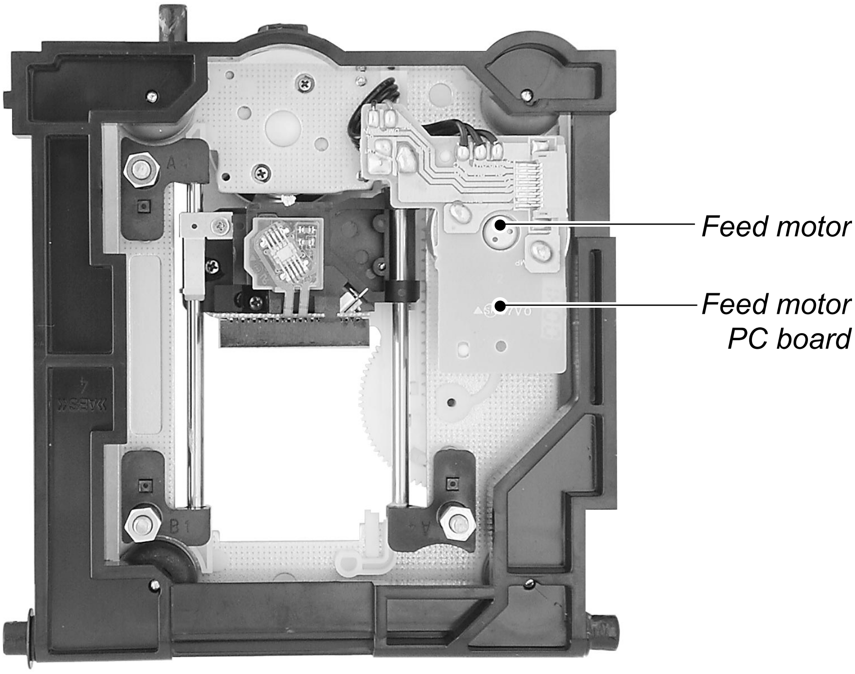

Feed motor
Feed motor PC board

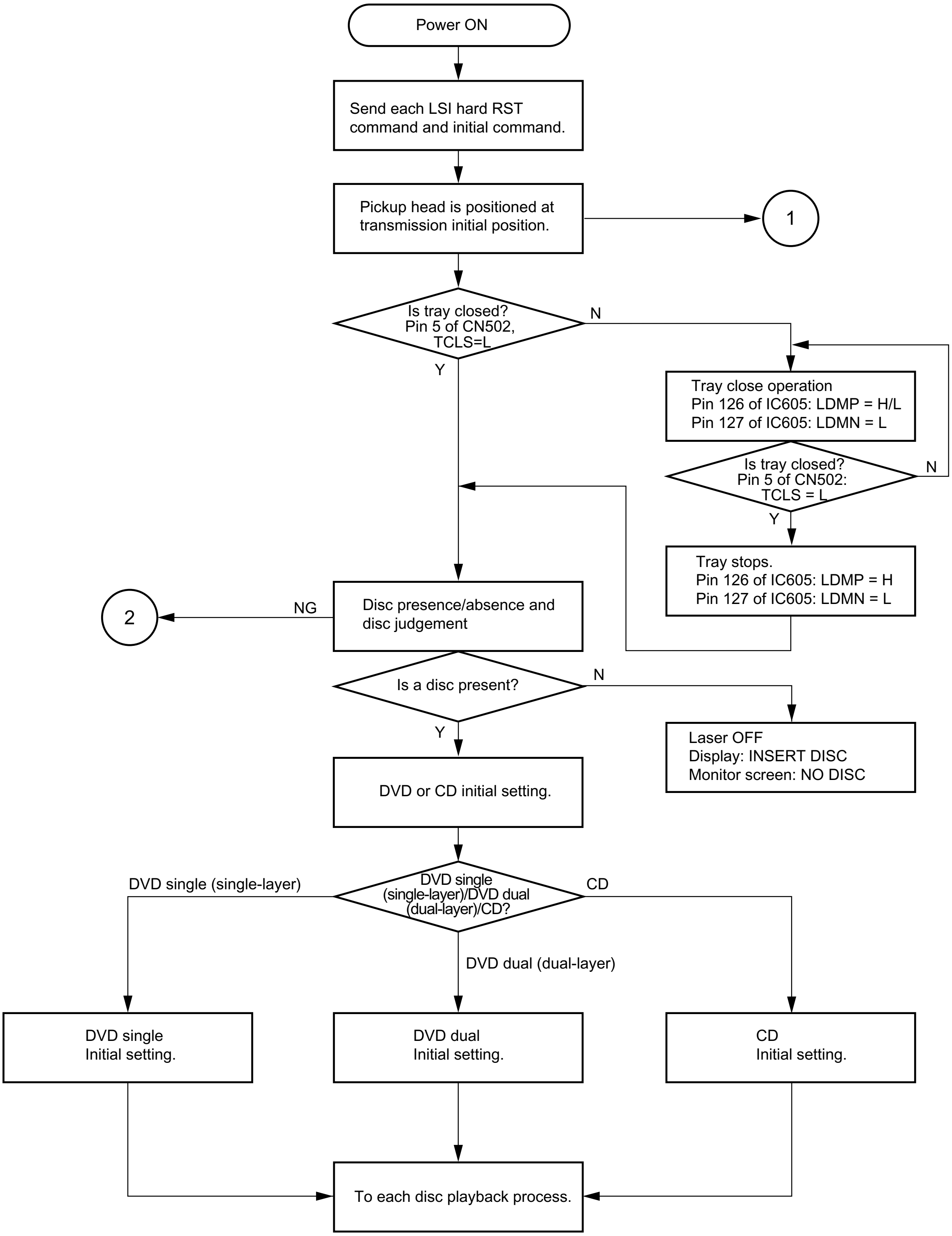
Fig. 1-2-8 Pickup mechanism chassis assembly (Bottom side)

3. TROUBLESHOOTING

3-1. Main Circuit

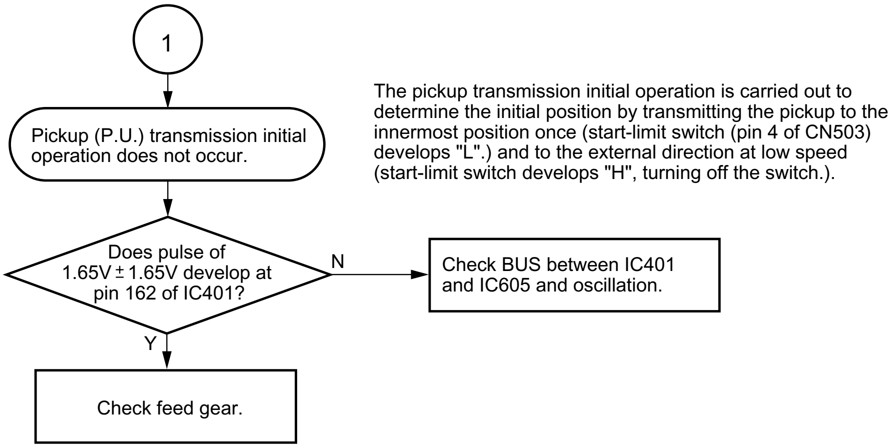
3-1-1. Servo System

(1) Initial Operation after Power ON



Power ON
Send each LSI hard RST command and initial command.
Pickup head is positioned at transmission initial position.
1
Is tray closed? Pin 5 of CN502, TCLS=L
N
Y
Tray close operation
Pin 126 of IC605: LDMP = H/L
Pin 127 of IC605: LDMN = L
Is tray closed? Pin 5 of CN502: TCLS = L
N
Y
Tray stops.
Pin 126 of IC605: LDMP = H
Pin 127 of IC605: LDMN = L
2
NG
Disc presence/absence and disc judgement
Is a disc present?
N
Y
Laser OFF
Display: INSERT DISC
Monitor screen: NO DISC
DVD or CD initial setting.
DVD single (single-layer)
DVD single (single-layer)/DVD dual (dual-layer)/CD?
CD
DVD dual (dual-layer)
DVD single Initial setting.
DVD dual Initial setting.
CD Initial setting.
To each disc playback process.

Fig. 1-3-1


1
Pickup (P.U.) transmission initial operation does not occur.
Does pulse of 1.65V ± 1.65V develop at pin 162 of IC401?
N
Check BUS between IC401 and IC605 and oscillation.
Y
Check feed gear.

The pickup transmission initial operation is carried out to determine the initial position by transmitting the pickup to the innermost position once (start-limit switch (pin 4 of CN503) develops "L".) and to the external direction at low speed (start-limit switch develops "H", turning off the switch.).

Fig. 1-3-2

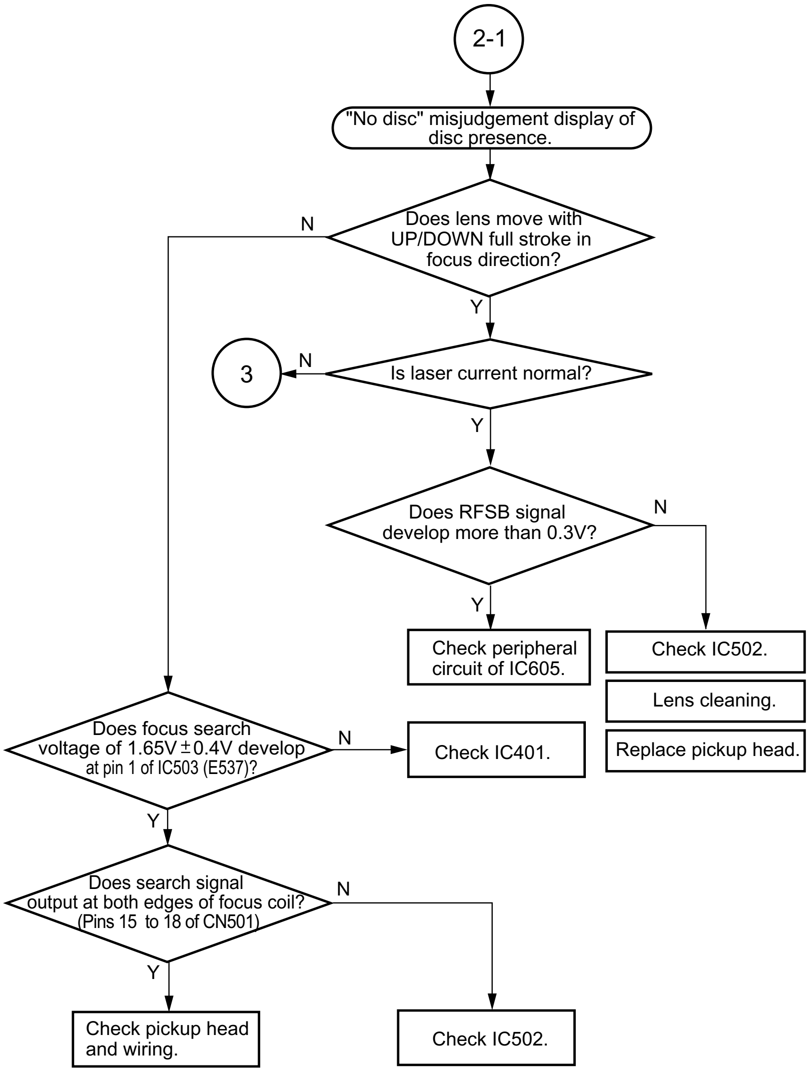

2-1
"No disc" misjudgement display of disc presence.
Does lens move with UP/DOWN full stroke in focus direction?
N
Y
Is laser current normal?
N
3
Y
Does RFSB signal develop more than 0.3V?
N
Y
Check peripheral circuit of IC605.
Check IC502.
Lens cleaning.
Replace pickup head.
Does focus search voltage of 1.65V ± 0.4V develop at pin 1 of IC503 (E537)?
N
Check IC401.
Y
Does search signal output at both edges of focus coil? (Pins 15 to 18 of CN501)
N
Y
Check pickup head and wiring.
Check IC502.

Fig. 1-3-3

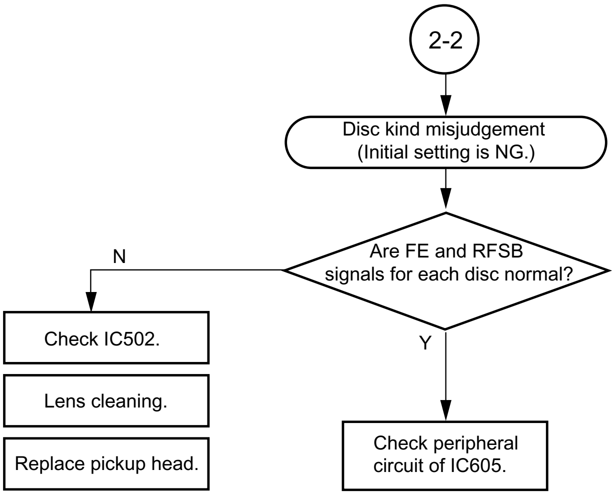
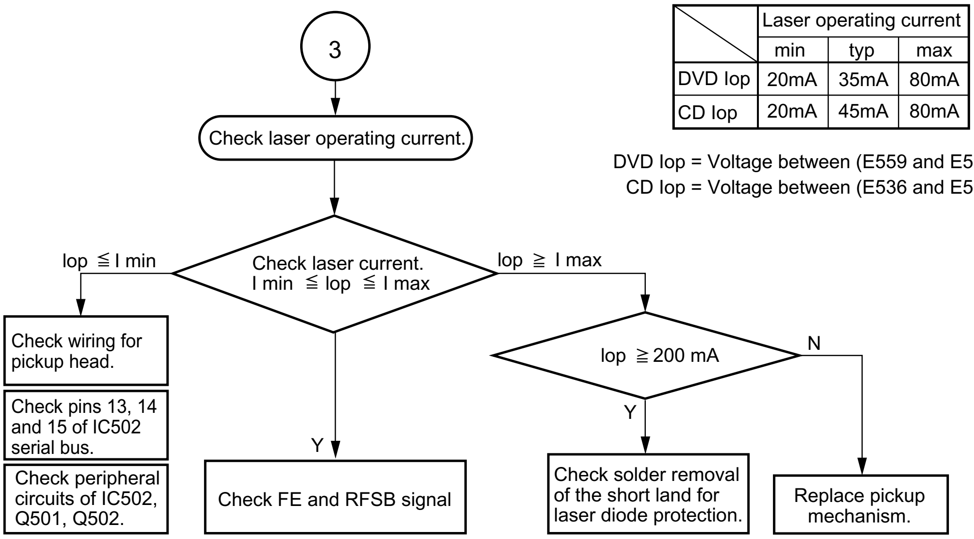

2-2
Disc kind misjudgement (Initial setting is NG.)
Are FE and RFSB signals for each disc normal?
N
Y
Check IC502.
Lens cleaning.
Replace pickup head.
Check peripheral circuit of IC605.

Fig. 1-3-4

	Laser operating current		
	min	typ	max
DVD Iop	20mA	35mA	80mA
CD Iop	20mA	45mA	80mA

DVD Iop = Voltage between (E559 and E591) /10Ω
CD Iop = Voltage between (E536 and E591) /10Ω

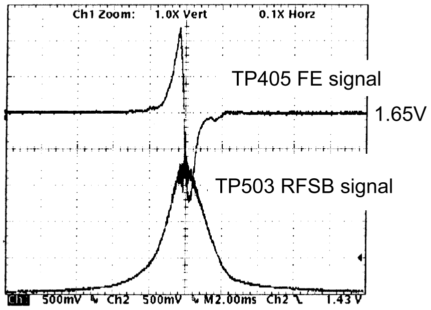

3
Check laser operating current.
Check laser current. I min ≦ Iop ≦ I max
Iop ≦ I min
Iop ≧ I max
Y
Check wiring for pickup head.
Check pins 13, 14 and 15 of IC502 serial bus.
Check peripheral circuits of IC502, Q501, Q502.
Check FE and RFSB signal
Iop ≧ 200 mA
N
Y
Check solder removal of the short land for laser diode protection.
Replace pickup mechanism.

To turn on each laser diode forcibly, press the following buttons on the remote controller.
DVD LD: ZOOM, 0, 3, 0, ZOOM
CD LD: ZOOM, 0, 3, 1, ZOOM
After checked the laser current, press POWER or OPEN/CLOSE button to turn it off.

CAUTION
- The laser ray emitting out from the pickup head is very harmful to your eyes. Keep your eyes from the objective lens at least 300mm distance during the pickup head operating.
- When you perform solder removal work, please turn OFF a set power supply and perform the ground of human body and a tool.

Fig. 1-3-5

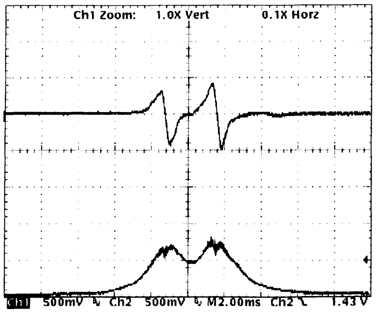
DVD single (single-layer) disc detection waveform



V : 500 mV/div
H : 2 ms/div

Fig. 1-3-6

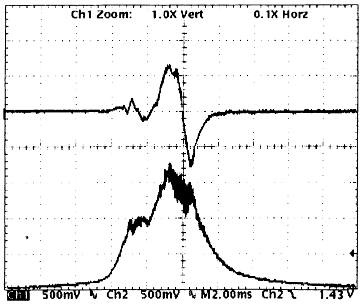
DVD dual (dual-layer) disc detection waveform



V : 500 mV/div
H : 2 ms/div

Fig. 1-3-7

CD disc detection waveform



V : 500 mV/div
H : 2 ms/div

Fig. 1-3-8

(2) Picture appears (PLAY)

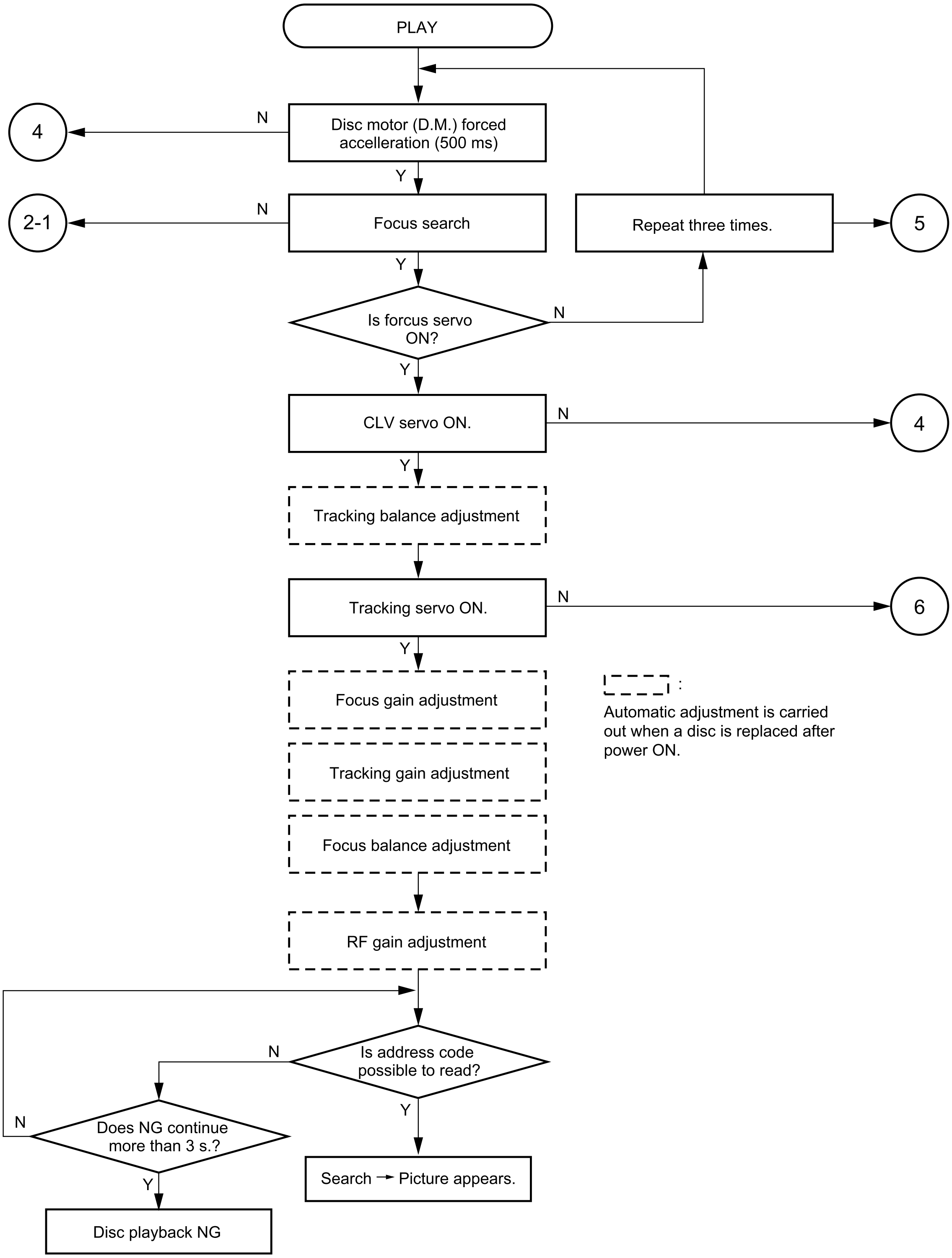

PLAY
Disc motor (D.M.) forced accelleration (500 ms)
N
4
Y
Focus search
N
2-1
Repeat three times.
5
Y
Is forcus servo ON?
N
Y
CLV servo ON.
N
4
Y
Tracking balance adjustment
Tracking servo ON.
N
6
Y
Focus gain adjustment
:
Automatic adjustment is carried out when a disc is replaced after power ON.
Tracking gain adjustment
Focus balance adjustment
RF gain adjustment
Is address code possible to read?
N
Y
Does NG continue more than 3 s.?
N
Y
Search → Picture appears.
Disc playback NG

Fig. 1-3-9

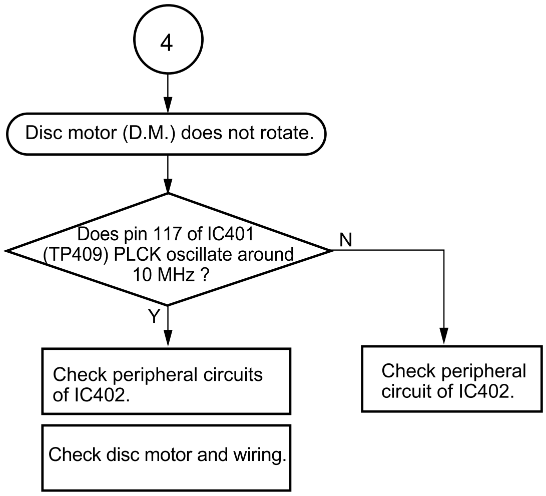

4
Disc motor (D.M.) does not rotate.
Does pin 117 of IC401 (TP409) PLCK oscillate around 10 MHz ?
N
Y
Check peripheral circuits of IC402.
Check disc motor and wiring.
Check peripheral circuit of IC402.

Fig. 1-3-10

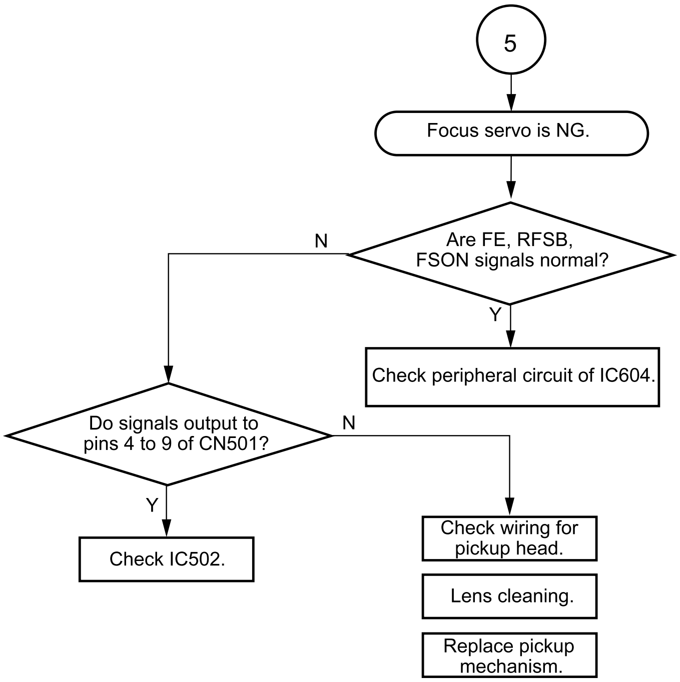

5
Focus servo is NG.
Are FE, RFSB, FSON signals normal?
N
Y
Check peripheral circuit of IC604.
Do signals output to pins 4 to 9 of CN501?
N
Y
Check IC502.
Check wiring for pickup head.
Lens cleaning.
Replace pickup mechanism.

Fig. 1-3-11

Focus servo ON signal waveform

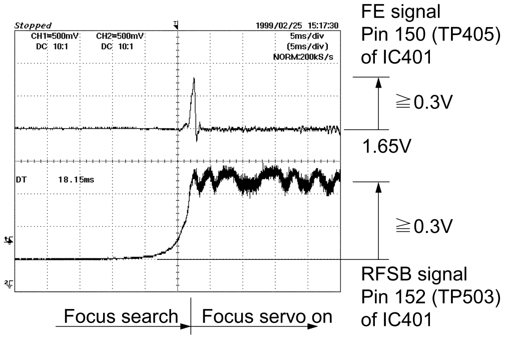


Fig. 1-3-12

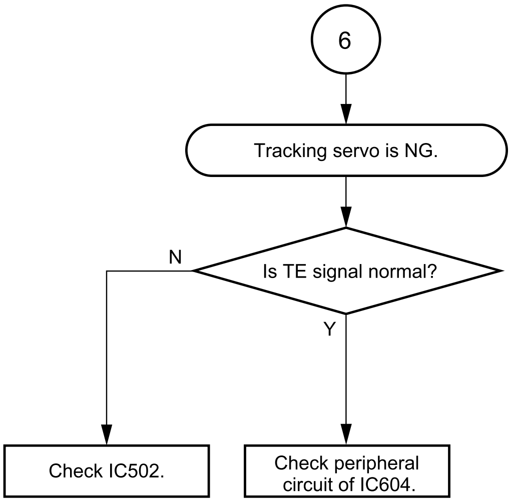
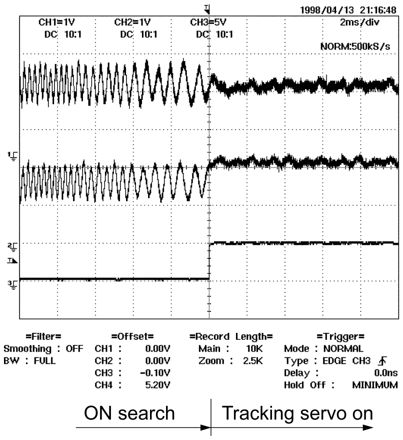

6
Tracking servo is NG.
Is TE signal normal?
N
Y
Check IC502.
Check peripheral circuit of IC604.

Fig. 1-3-13

Signal waveform at tracking servo ON (CD)



```
 =Filter=           =Offset=        =Record Length=        =Trigger=
Smoothing : OFF  CH1 :    0.00V      Main :   10K    Mode : NORMAL
BW : FULL        CH2 :    0.00V      Zoom :  2.5K    Type : EDGE CH3
                 CH3 :   -0.10V                      Delay :        0.0ns
                 CH4 :    5.20V                      Hold Off :   MINIMUM
```

TE signal
Pin 151 (TP406) of IC401

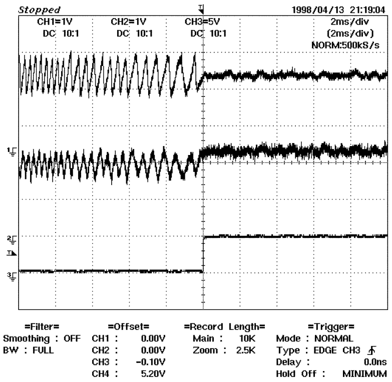
1.65V

RFRP signal
Pin 153 (TP408) of IC401

Search ON (SRCH)
Pin 38 (TP411) of IC401

Fig. 1-3-14

Signal waveform at tracking servo ON (DVD)



```
 =Filter=           =Offset=        =Record Length=        =Trigger=
Smoothing : OFF  CH1 :    0.00V      Main :   10K    Mode : NORMAL
BW : FULL        CH2 :    0.00V      Zoom :  2.5K    Type : EDGE CH3
                 CH3 :   -0.10V                      Delay :        0.0ns
                 CH4 :    5.20V                      Hold Off :   MINIMUM
```

Fig. 1-3-15

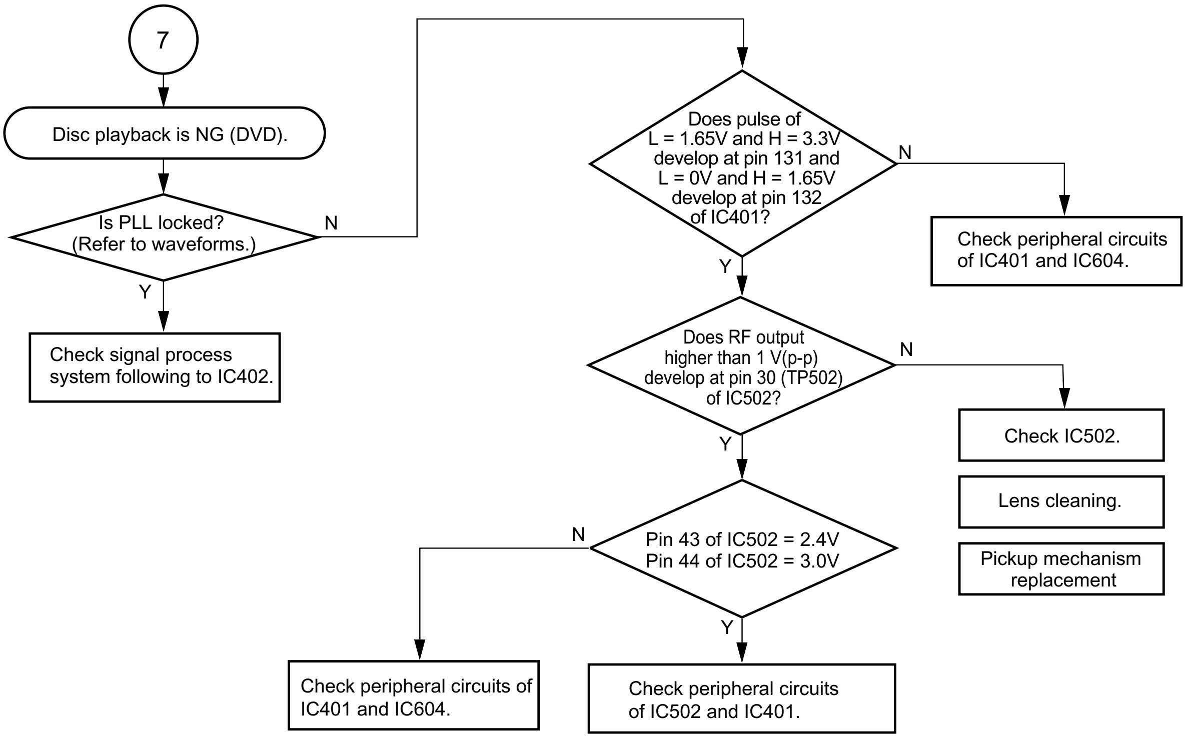
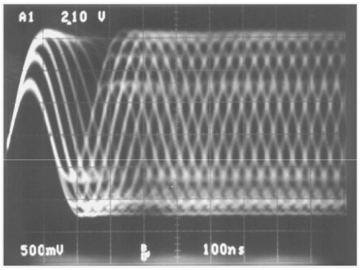

7
Disc playback is NG (DVD).
Is PLL locked?
(Refer to waveforms.)
N
Y
Check signal process system following to IC402.
Does pulse of L = 1.65V and H = 3.3V develop at pin 131 and L = 0V and H = 1.65V develop at pin 132 of IC401?
N
Check peripheral circuits of IC401 and IC604.
Y
Does RF output higher than 1 V(p-p) develop at pin 30 (TP502) of IC502?
N
Check IC502.
Lens cleaning.
Pickup mechanism replacement
Y
Pin 43 of IC502 = 2.4V
Pin 44 of IC502 = 3.0V
N
Check peripheral circuits of IC401 and IC604.
Y
Check peripheral circuits of IC502 and IC401.

Fig. 1-3-16

DVD RF signal

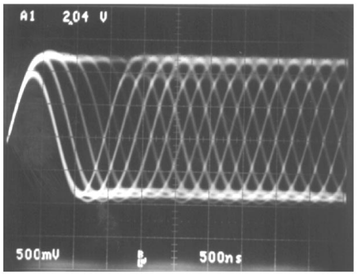


DVD RF signal
Pin 30 (TP502) of IC502

V : 500 mV/div
H : 50 ns/div

Fig. 1-3-17

CD RF signal



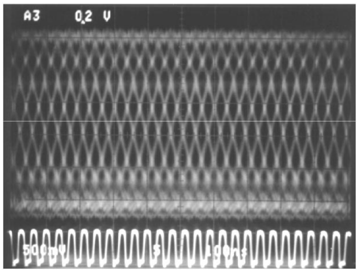
CD RF signal
Pin 30 (TP502) of IC502

V : 500 mV/div
H : 100 ns/div

Fig. 1-3-18

PLL works as a servo loop to generate a clock signal for reading RF signal binary data. With the PLL locked, the eye pattern is identified clearly when triggered with the read clock PLCK.

DVD playback waveform



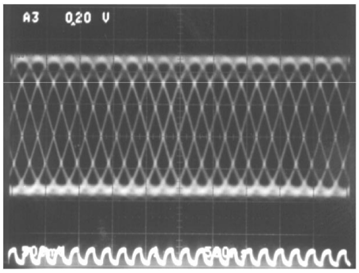
DVD RF signal
Pin 30 (TP502) of IC502

DVD PLCK
Pin 117 (TP409) of IC401

CH1 : TP502 DVDRF 500 mV/div
CH2 : TP409 DVDPLCK 5 V/div
50 ns/div

Fig. 1-3-19

CD playback waveform



CD RF signal
Pin 30 (TP502) of IC502

CD PLCK
Pin 117 (TP409) of IC401

CH1 : TP502 CDRF 500 mV/div
CH2 : TP409 CDPLCK 5 V/div
100 ns/div

Fig. 1-3-20

3-1-2. Location Diagram of Servo Test Point

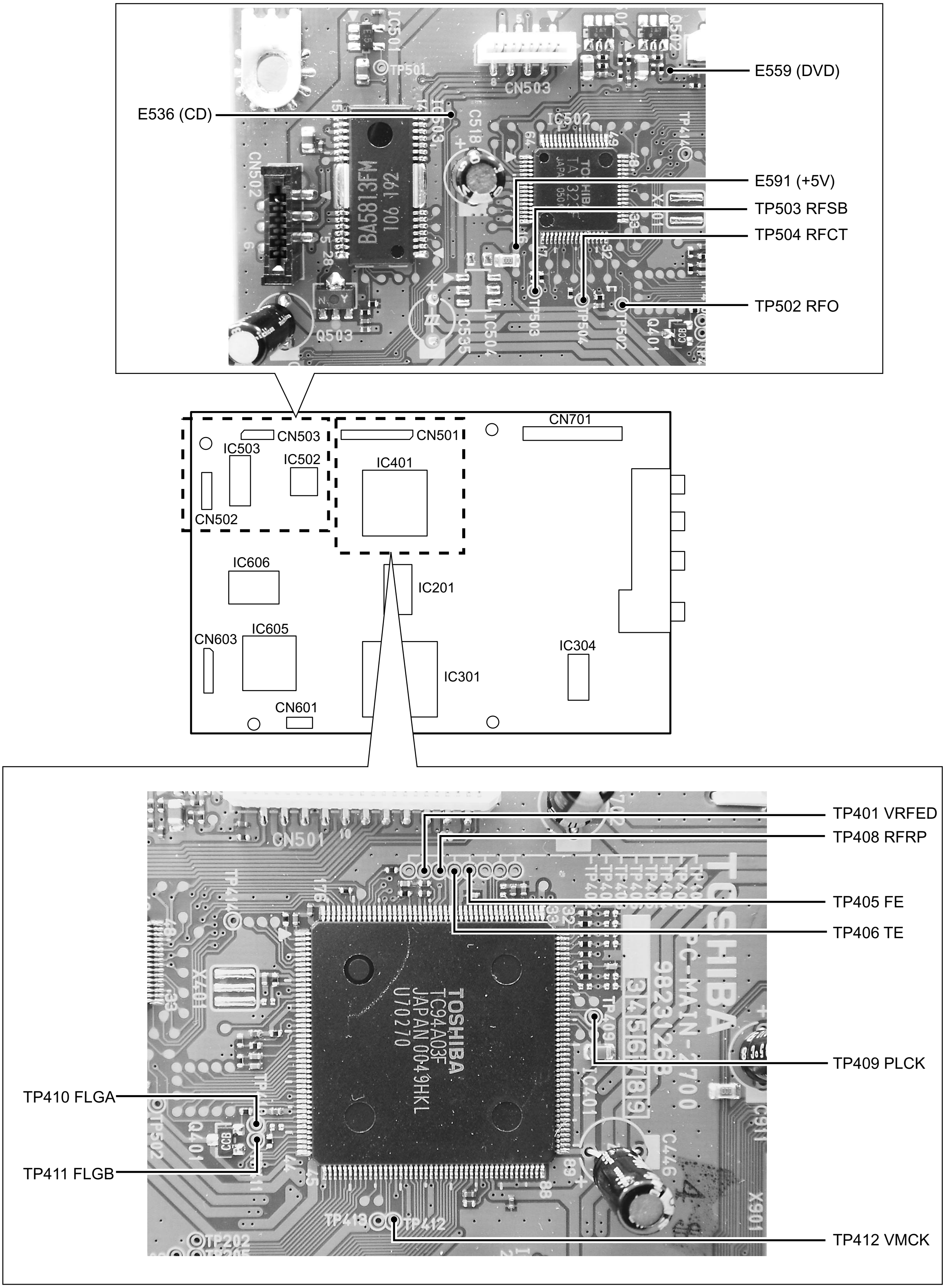

E559 (DVD)
E536 (CD)
E591 (+5V)
TP503 RFSB
TP504 RFCT
TP502 RFO
CN701
CN503
CN501
IC503
IC502
IC401
CN502
IC606
IC201
CN603
IC605
IC304
IC301
CN601
TP401 VRFED
TP408 RFRP
TP405 FE
TP406 TE
TP409 PLCK
TP410 FLGA
TP411 FLGB
TP412 VMCK

Fig. 1-3-21

SECTION 2
PART REPLACEMENT AND ADJUSTMENT PROCEDURES

CAUTIONS BEFORE STARTING SERVICING

Electronic parts are susceptible to static electricity and may easily damaged, so do not forget to take a proper grounding treatment as required.

Many screws are used inside the unit. To prevent missing, dropping, etc. of the screws, always use a magnetized screwdriver in servicing. Several kinds of screws are used and some of them need special cautions. That is, take care of the tapping screws securing molded parts and fine pitch screws used to secure metal parts. If they are used improperly, the screw holes will be easily damaged and the parts can not be fixed.

1. REPLACEMENT OF MECHANICAL PARTS

1-1. Cabinet Replacement

1-1-1. Top Cover

1. Remove five screws (1) and remove the top cover (2).

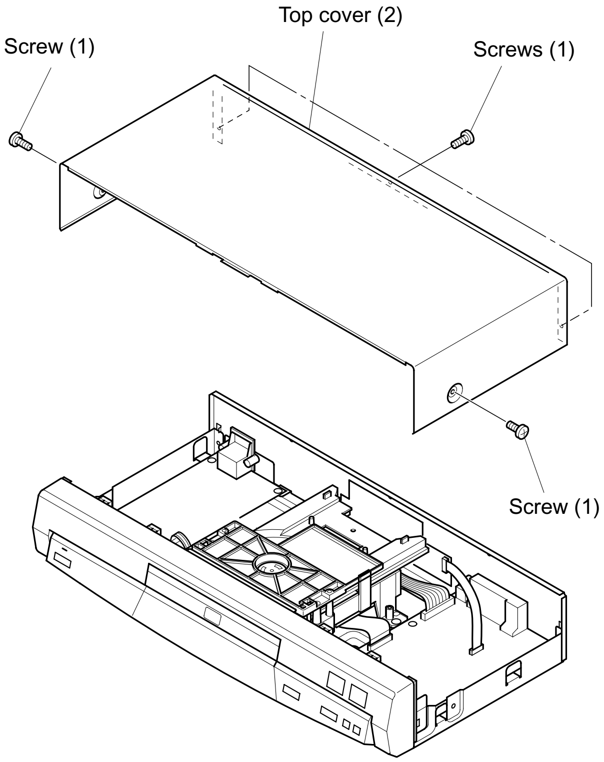

Top cover (2)
Screw (1)
Screws (1)
Screw (1)

Fig. 2-1-1

1-1-2. Clamper Stay

<Removal>

1. Remove two screws (1).
2. Release two claws and remove the clamper stay (2).

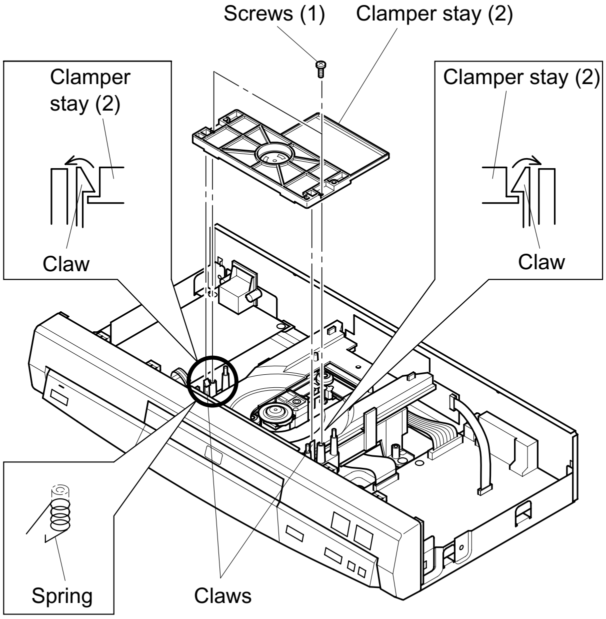

Screws (1)
Clamper stay (2)
Clamper stay (2)
Clamper stay (2)
Claw
Claw
Spring
Claws

Fig. 2-1-2

<Mounting >

1. The spring for tray side pressure is inserted into the portion “A”. (Refer to Fig. 2-1-2.)
2. By referring to Fig. 2-1-3, insert the spring normally and mount the clamper stay.

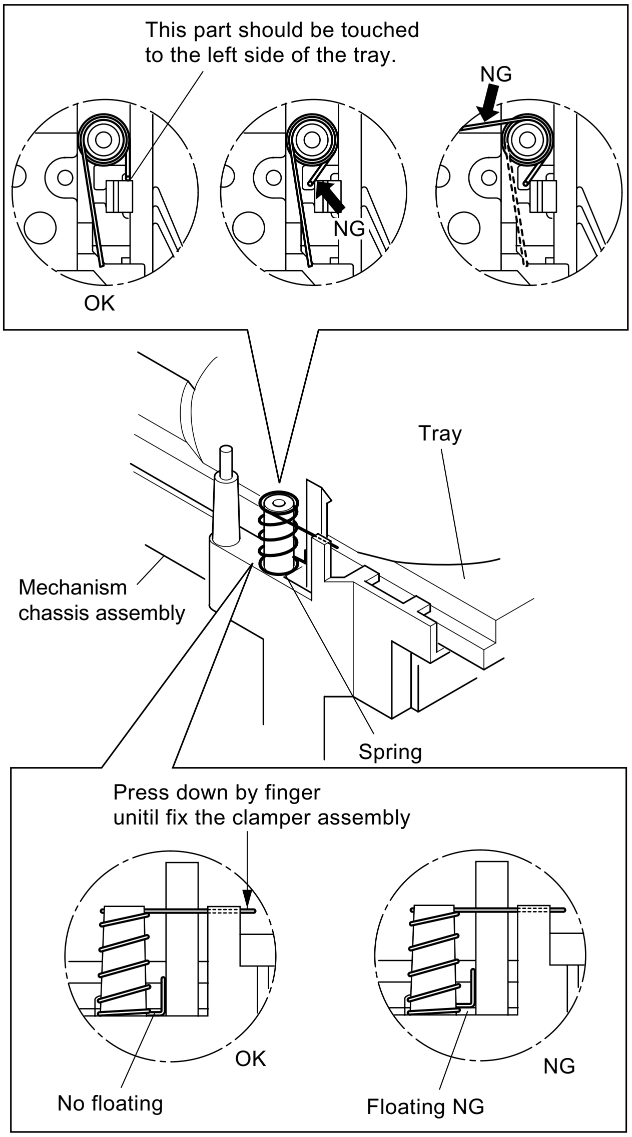

This part should be touched to the left side of the tray.
NG
NG
OK
Tray
Mechanism chassis assembly
Spring
Press down by finger unitil fix the clamper assembly
OK
NG
No floating
Floating NG

Fig. 2-1-3

1-1-3. Tray Panel

<Tray Ejection>

1. Slide the slider (2) of the mechanism chassis assembly (1) with a screwdriver, etc. in the arrow direction, so that the tray (3) is ejected.

Note:

- Take care not to damage the pickup and other parts.

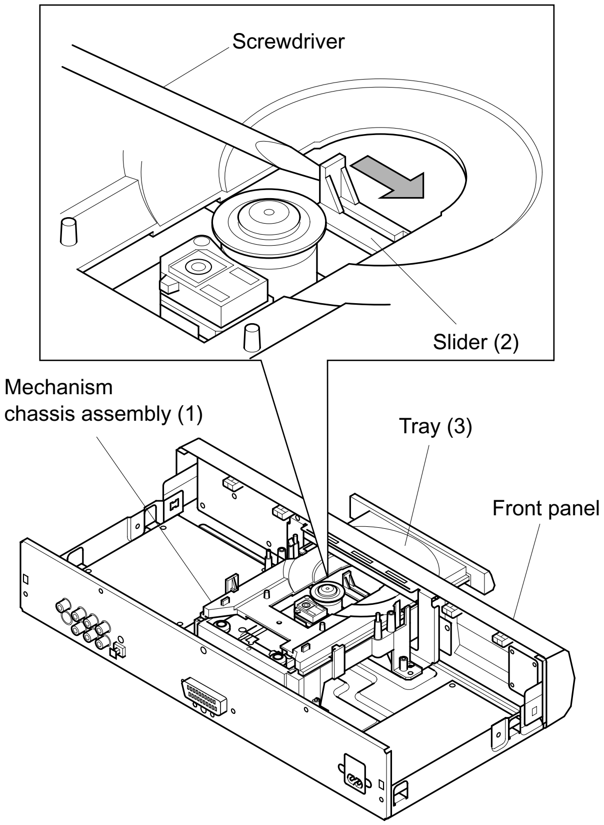

Screwdriver
Slider (2)
Mechanism chassis assembly (1)
Tray (3)
Front panel

Fig. 2-1-4

<Tray Panel Removal>

1. Eject the tray (3).
2. Twist the tray panel (4) a little in the arrow A direction with the tray (3) hold by hand to release two claws and lift up the tray panel (4) in the arrow B direction, then the tray panel (4) is removed.
(Refer to Fig. 2-1-5.)
3. When mounting the tray panel (4), insert the tray panel (4) along the grooves of the both sides of the tray (3) until clicking.

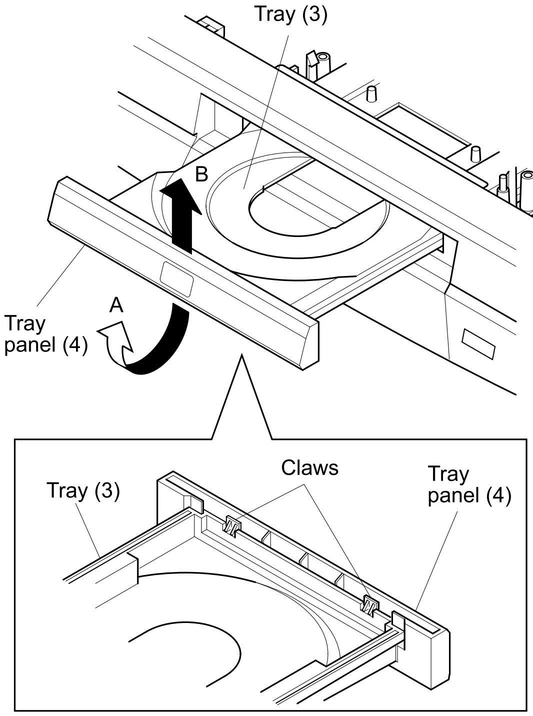

Tray (3)
B
A
Tray panel (4)
Tray (3)
Claws
Tray panel (4)

Fig. 2-1-5

1-1-4. Front Panel and Tray

1. Remove the flexible cable (1).
2. Release four claws and remove the front panel (3).
3. Pull out the tray (2) to this side.

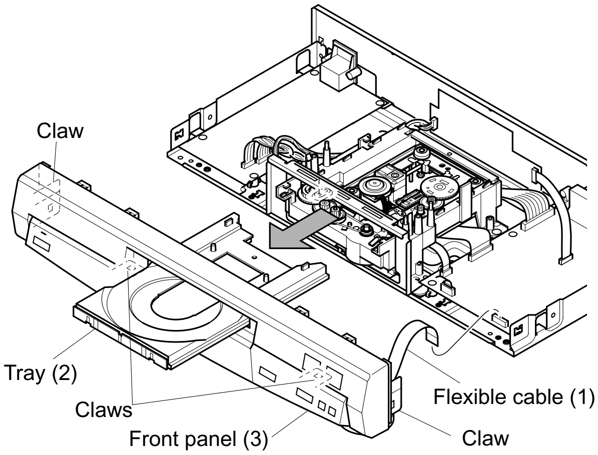

Claw
Tray (2)
Claws
Front panel (3)
Flexible cable (1)
Claw

Fig. 2-1-6

Note:

- Insert the tray (2) with the front side of the pickup mechanism assembly descended. (The slider positions to the left side.)
- The gears are required to match their phases each other. After setting the gear (4) as shown in the figure “A”, insert the tray (2). When inserting a tray (2), push the rack gear side shown by the arrow.
- Confirm that the mark of the gear matches with the triangle mark on the reverse side of the tray in the tray close status. (The gear is rotated with the slider locks.) (Refer to Fig. B.)

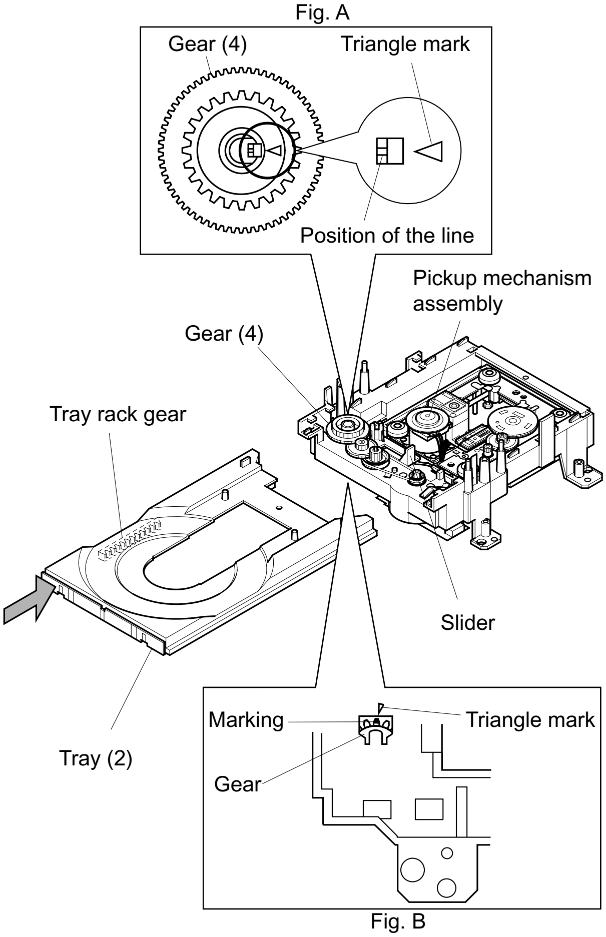


Fig. A
Gear (4)
Triangle mark
Position of the line
Pickup mechanism assembly
Gear (4)
Tray rack gear
Slider
Tray (2)
Marking
Triangle mark
Gear
Fig. B

Fig. 2-1-7

1-1-5. Rear Panel

1. Remove eight screws (1) and remove the rear panel (2).

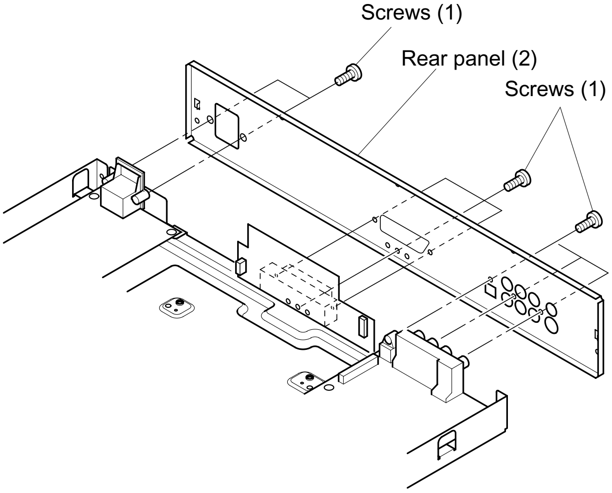

Screws (1)
Rear panel (2)
Screws (1)

Fig. 2-1-8

1-2. PC Board Replacement

1-2-1. Main PC Board

Note:

- Before removing the main PC board (5), be sure to short-circuit the laser diode output land.

  After replacing, open the land as it was after inserting the flexible cables (1).

1. Remove the top cover. (Refer to item 1-1-1.)
2. Remove five flexible cables (1) and remove one connector (2).
3. Remove four screws (3).
4. Remove three screws (4) and remove the main PC board (5).

Note:

- When mounting, be sure to twist the wire for the connector (3) several times.

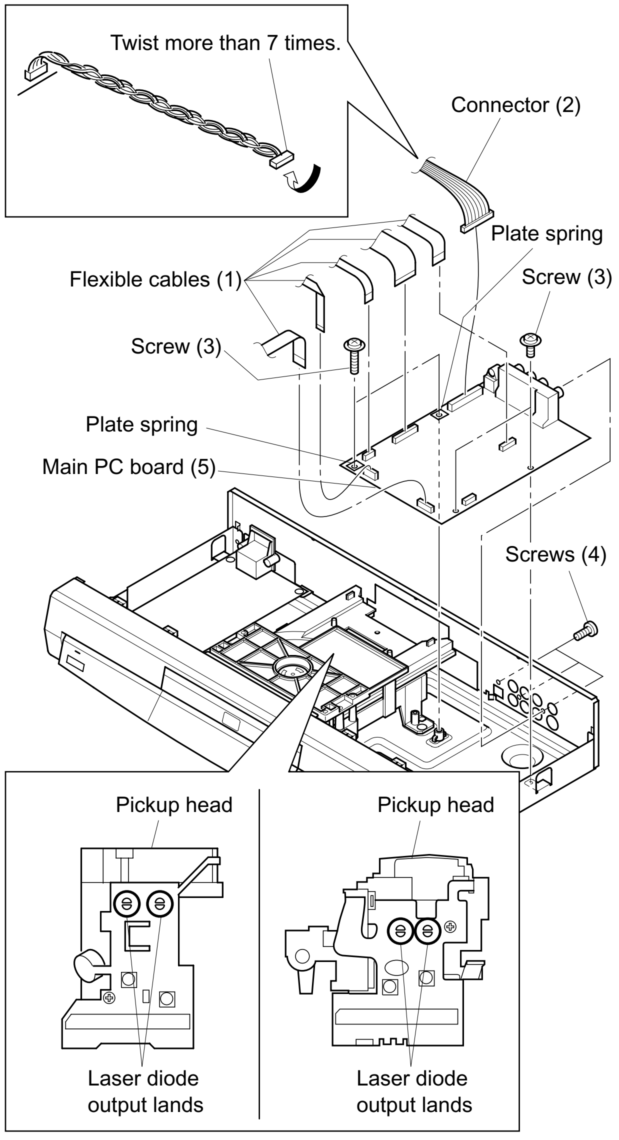

Twist more than 7 times.
Connector (2)
Plate spring
Flexible cables (1)
Screw (3)
Screw (3)
Plate spring
Main PC board (5)
Screws (4)
Pickup head
Pickup head
Laser diode output lands
Laser diode output lands
Type A
Type B

Fig. 2-1-9

1-2-2. Power PC board

1. Peel off two tapes (1).
2. Remove two connectors (2).
3. Remove four screws (3).
4. Remove two screws (4) and remove the power supply PC board (5).

Note:

- When mounting, be sure to twist the wire for the connectors (2) several times.

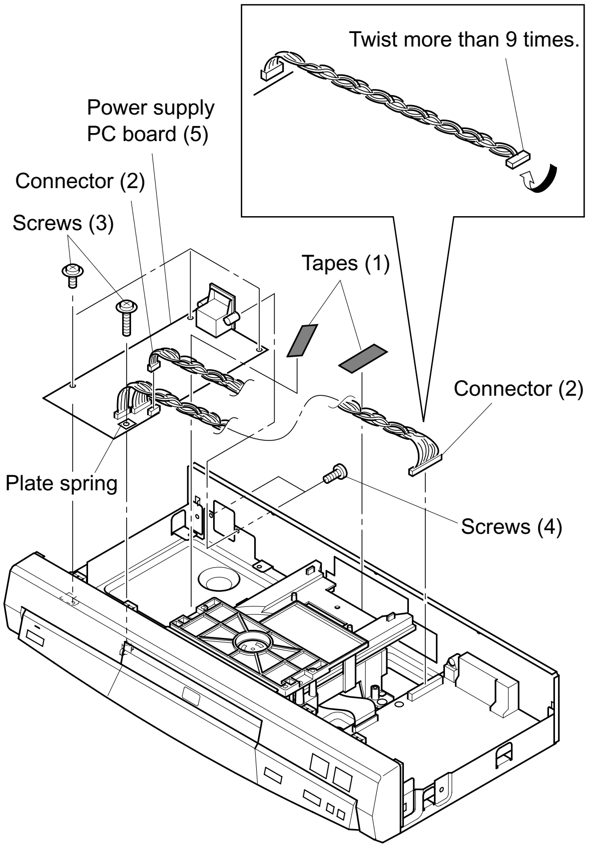

Twist more than 9 times.
Power supply PC board (5)
Connector (2)
Screws (3)
Tapes (1)
Connector (2)
Plate spring
Screws (4)

Fig. 2-1-10

1-2-3. Front PC Board

1. Remove the front panel. (Refer to item 1-1-4.)
2. Remove six screws (1) and remove the front display PC board (2)
3. Remove two screws (3) and remove the power switch PC board (4).

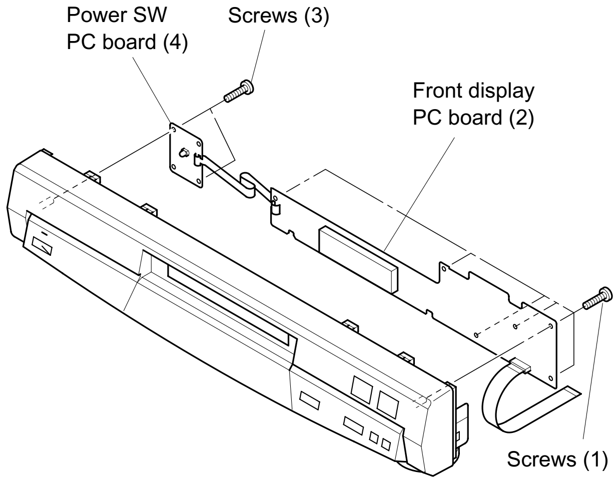

Power SW
PC board (4)
Screws (3)
Front display
PC board (2)
Screws (1)

Fig. 2-1-11

1-2-4. Output-RGB PC Board

1. Remove two screws (1).
2. Remove the flexible cable (2).
3. Peel off the tape (3).
4. Remove the connector (4) and remove the Output-RGB PC board (5).

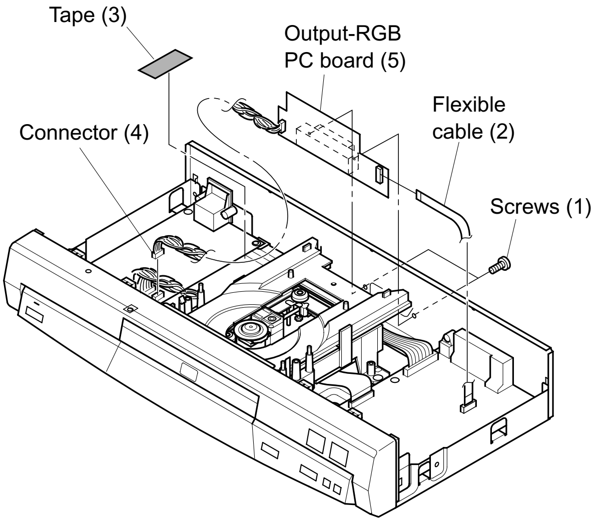

Tape (3)
Output-RGB
PC board (5)
Flexible
cable (2)
Connector (4)
Screws (1)

Fig. 2-1-12

1-3. Mechanism Parts

1-3-1. Mechanism Chassis Assembly

Note:

- When removing the mechanism chassis assembly (3), be sure to short-circuit the laser diode output land before removing the connector and the flexible cables.

  After replacing, open the land as it was after inserting the connector and flexible cables.

1. Remove the tray. (Refer to items 1-1-3 and 1-1-4.)
2. Remove three flexible cables (1).
3. Remove four screws (2) and remove the mechanism chassis assembly (3).

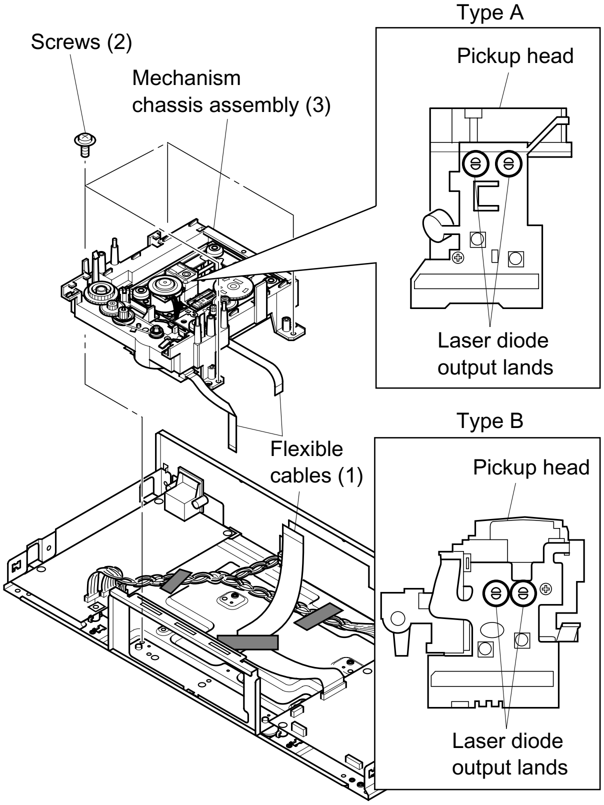

Type A
Screws (2)
Pickup head
Mechanism
chassis assembly (3)
Laser diode
output lands
Type B
Flexible
cables (1)
Pickup head
Laser diode
output lands

Fig. 2-1-13

1-3-2. Loading Belt

1. Remove the gear (1) by releasing the claw.
2. Remove the gear (2).
3. Remove the gear (3) and the loading belt (4).
4. Replace the loading belt (4) with a new one.
5. When mounting, perform the reverse order of the removal.

Note:

- When mounting the loading belt (4), twisting and attaching of a grease, etc. are not allowed.

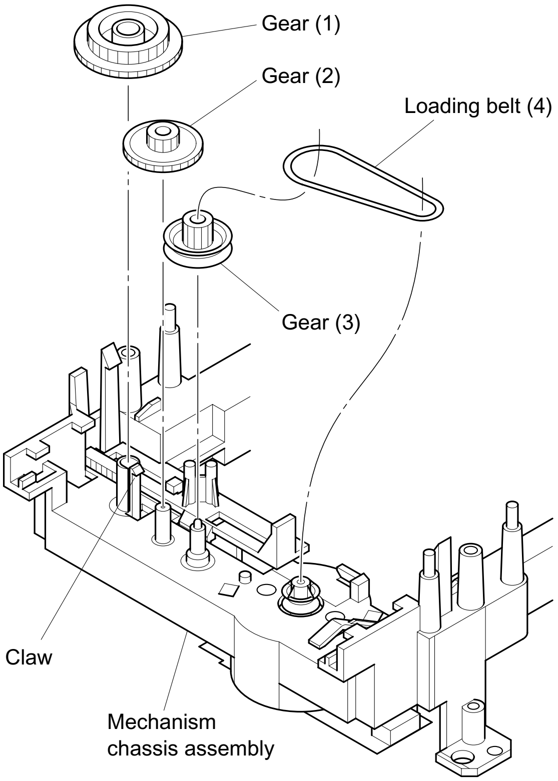

Gear (1)
Gear (2)
Loading belt (4)
Gear (3)
Claw
Mechanism chassis assembly

Fig. 2-1-14

1-3-3. Loading Motor

1. Remove the loading belt. (Refer to item 1-3-2.)
2. Remove two screws (1) and two claws. Then remove the loading motor (2) (with the loading motor PC board (3) attached).
3. Desolder the terminal section of the loading motor (2) and remove the loading motor PC board (3).
4. Replace the loading motor (2) with a new one.
5. When mounting, perform the reverse order of the removal.

Note:

- When replacing the loading motor, meet the polarity phase of the terminals. (Mount the motor with the label positioned as shown in Fig. 2-1-15.)

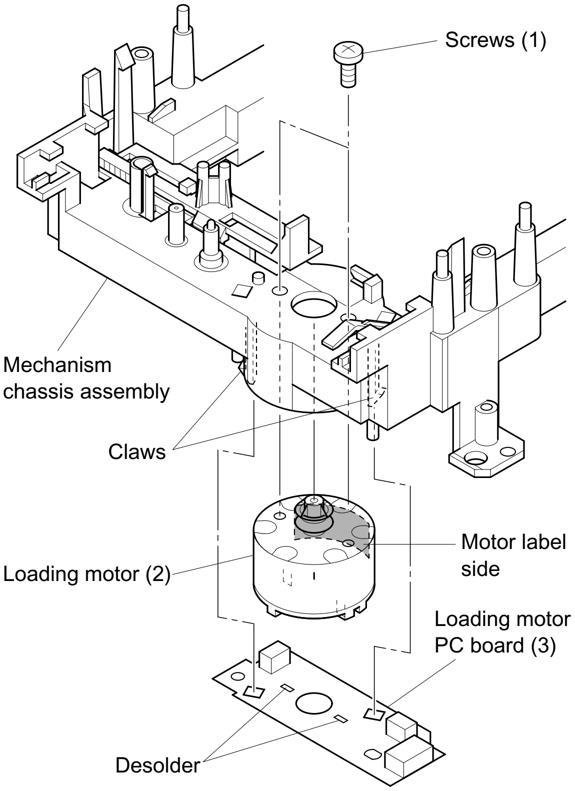

Screws (1)
Mechanism chassis assembly
Claws
Motor label side
Loading motor (2)
Loading motor PC board (3)
Desolder

Fig. 2-1-15

1-3-4. Sub Chassis (with a pickup mechanism)

1. Turn the mechanism chassis assembly (1) upside down.
2. Remove one screw (2) and one washer (3) release the boss “A” from the claw. Then remove the sub chassis (4) (with the pickup mechanism) by sliding in the arrow direction.
3. When mounting, perform the reverse order of the removal.

Note:

- When mounting the sub chassis (4) (with the pickup mechanism), first, insert the boss “C” along the groove of the cam slider up/down cam (5) and next, the boss “B” and “A”.
- The boss “A” may be used with washers. (One or two washers are used to prevent from the slust rattling. In some cases, no washer is used.)

  When the washer(s) is used, be sure to assemble as it was without losing.

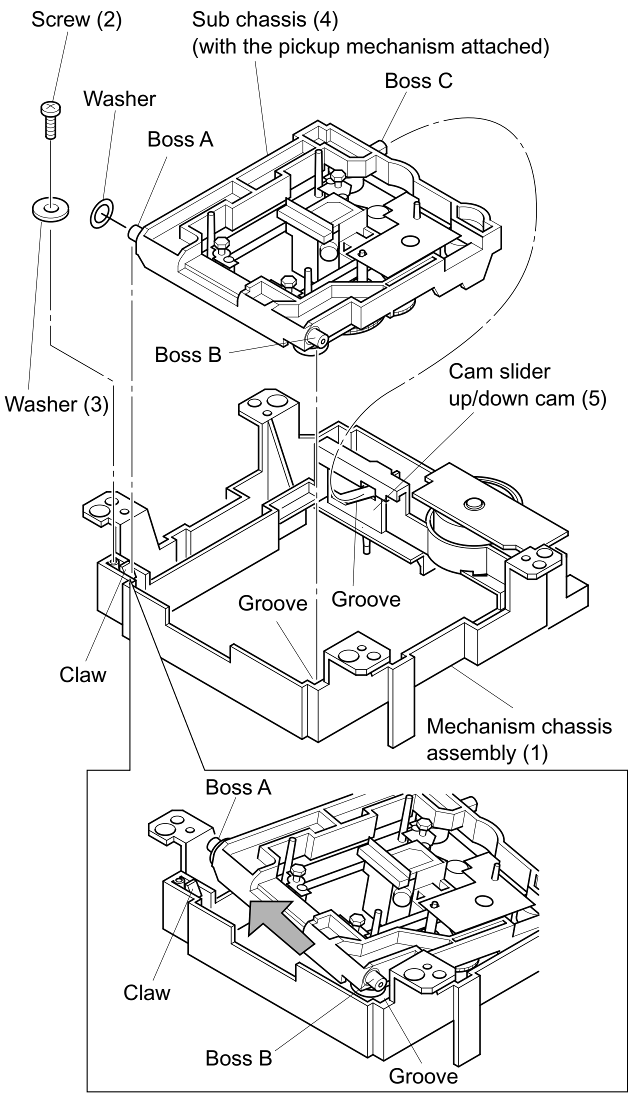

Screw (2)
Sub chassis (4)
(with the pickup mechanism attached)
Boss C
Washer
Boss A
Boss B
Washer (3)
Cam slider
up/down cam (5)
Groove
Groove
Claw
Mechanism chassis
assembly (1)
Boss A
Claw
Boss B
Groove

Fig. 2-1-16

1-3-5. Pickup Mechanism Assembly

<Removal>

1. Remove four screws (1) and four washers (2) then remove the pickup mechanism assembly (3).

<Mounting>

1. Replace the pickup mechanism assembly (3) with a new one.
2. When mounting, perform the reverse order of the removal.

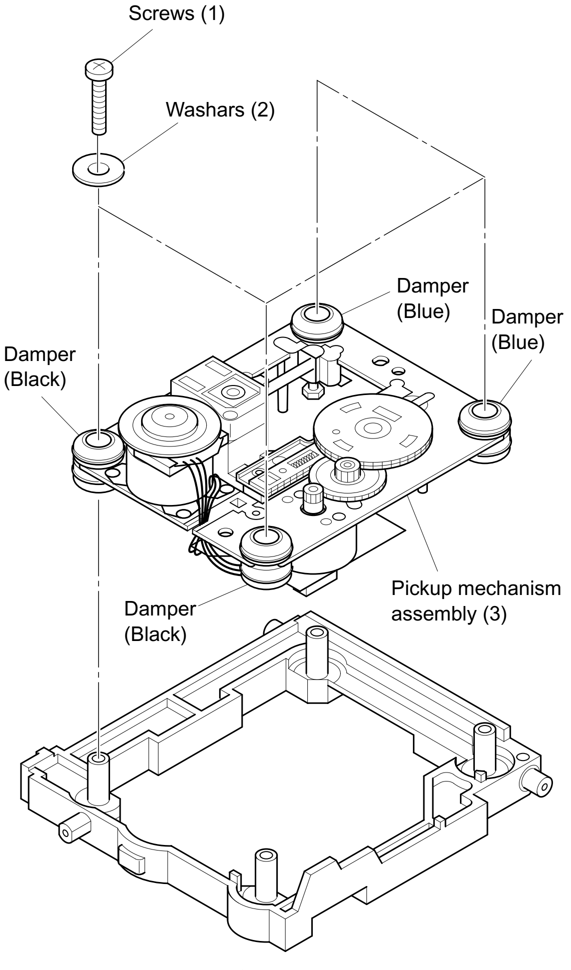

Screws (1)
Washars (2)
Damper
(Blue)
Damper
(Blue)
Damper
(Black)
Damper
(Black)
Pickup mechanism
assembly (3)

Fig. 2-1-17

Note:

- The dampers’ color differs when used for the front side and the rear.
- When mounting the pickup mechanism assembly (2) with the screws (1), push the pickup mechanism assembly (2) downward without being caught and tighten the screws (1) after placing the washer with the damper bent.

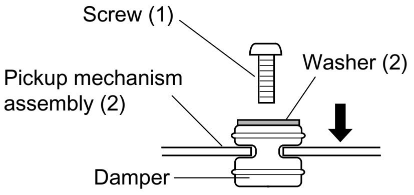

Screw (1)
Washer (2)
Pickup mechanism
assembly (2)
Damper

Fig. 2-1-18

1-3-6. Gear B Assembly, Gear A and Rack Gear Assembly

<Removal>

1. Remove one screw (3) and remove the gear B assembly (1).
2. Remove the gear A (2).
3. Remove one screw (5) and remove the rack gear assembly (4).

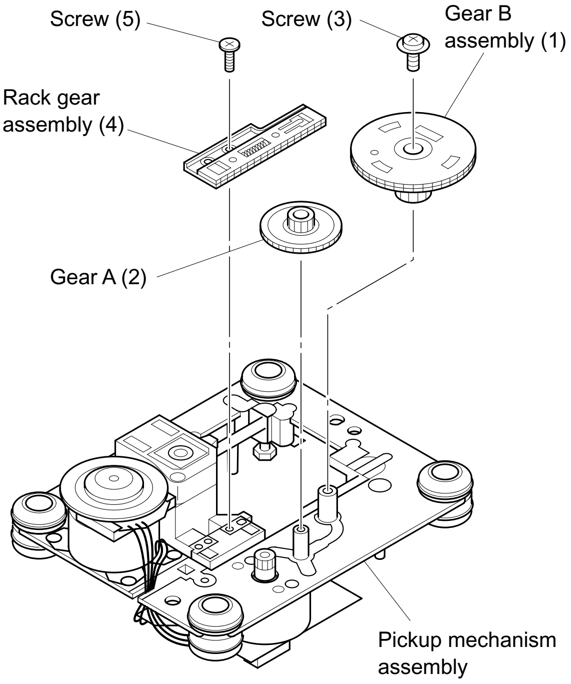

Screw (5)
Screw (3)
Gear B assembly (1)
Rack gear assembly (4)
Gear A (2)
Pickup mechanism assembly

Fig. 2-1-19

<Mounting>

1. When mounting, perform the reverse order of the removal.
2. Mount the gear B assembly (1) by pushing the pickup head (5) to the disc motor side (arrow A direction) and shifting the upper gear of the rack gear assembly (4) in the arrow B direction. (Refer to Fig. 2-1-20.)
3. Fit the positioning holes on the upper gear and lower gear of the gear B assembly (1) and mount on the pickup mechanism assembly with the phase matched.

   At this time, note that the phase of the gear B assembly (1) and the gear A (2) shows the status in the Fig. 2-1-21.

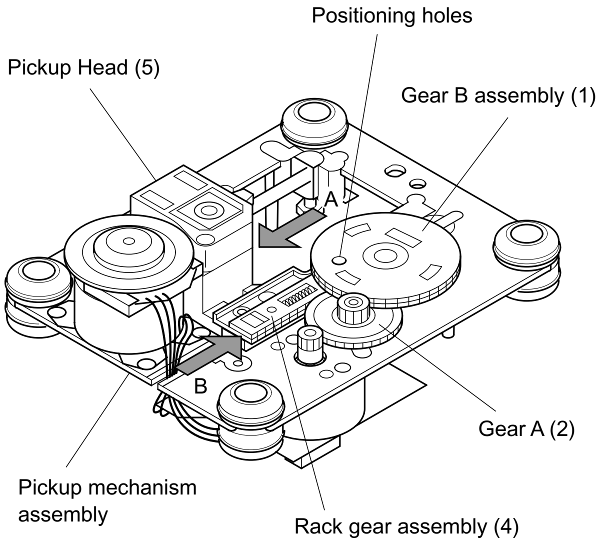

Positioning holes
Pickup Head (5)
Gear B assembly (1)
A
B
Gear A (2)
Pickup mechanism assembly
Rack gear assembly (4)

Fig. 2-1-20

Note:

- Mount the gear B assembly (1) and the gear A (2) with their gear teeth placed more than one tooth at least inside the shaded portion.

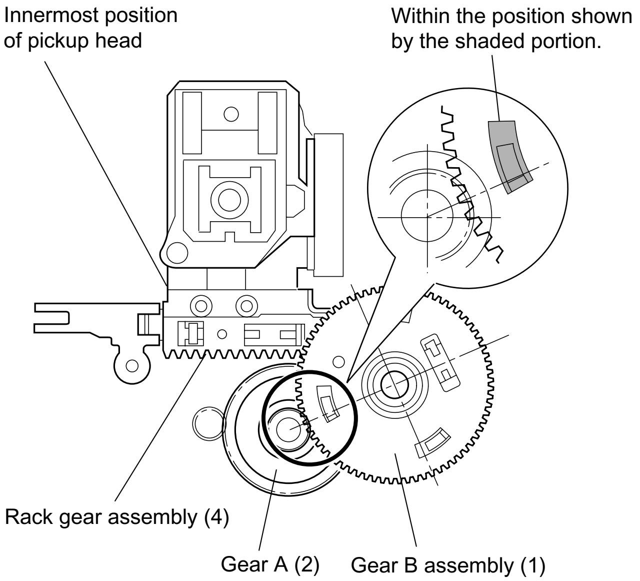

Innermost position of pickup head
Within the position shown by the shaded portion.
Rack gear assembly (4)
Gear A (2)
Gear B assembly (1)

Fig. 2-1-21

1-3-7. Feed Motor

<Removal>

1. Remove the gear B assembly and the gear A. (Refer to item 1-3-6.)
2. Remove two screws (1) and remove the feed motor (2) (with the feed motor PC board (3) attached).
   (Refer to Fig. 2-1-22.)
3. Desolder the terminals of the feed motor (2) and remove the feed motor PC board (3).

<Mounting>

1. Tighten the feed motor (2) on the pickup mechanism assembly with two screws (1).
2. Insert the feed motor PC board (3) with the positioning pin on the chassis matched and solder the terminals.
3. Perform the reverse order of the removal.

Note:

- After mounting, put the lead wires through the notch of the pickup mechanism assembly.
- When replacing the loading motor, meet the polarity phase of the terminals. (Mount the motor with the label positioned as shown in Fig. 2-1-22.)

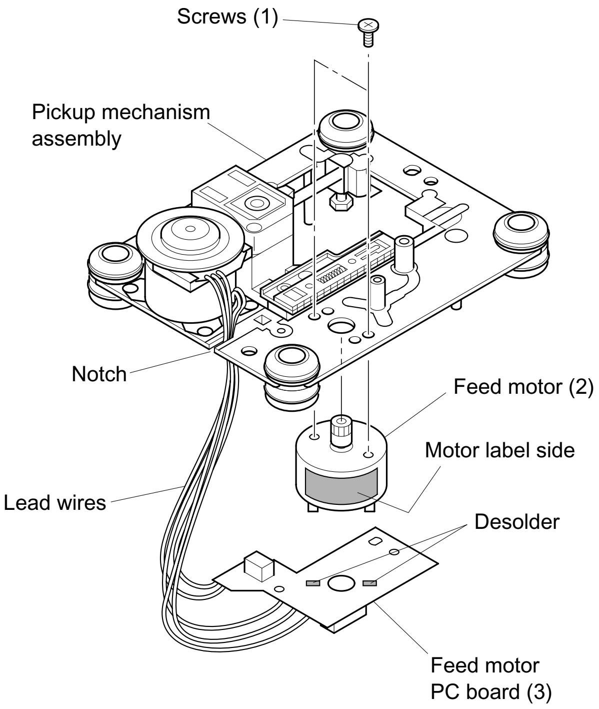

Screws (1)
Pickup mechanism assembly
Notch
Feed motor (2)
Motor label side
Lead wires
Desolder
Feed motor PC board (3)

Fig. 2-1-22

SECTION 3

SERVICING DIAGRAMS

1. STANDING PC BOARDS FOR SERVICING

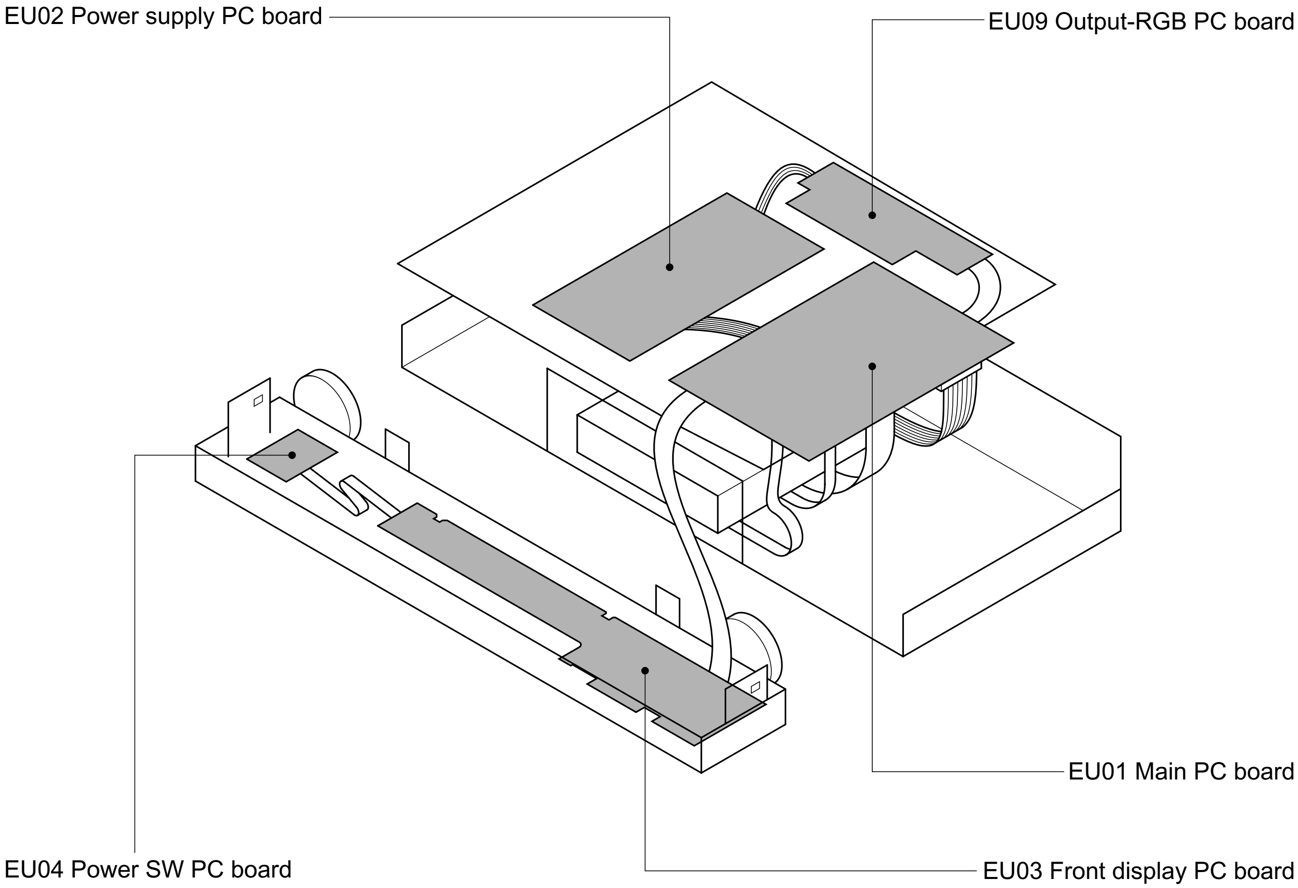

EU02 Power supply PC board
EU09 Output-RGB PC board
EU01 Main PC board
EU04 Power SW PC board
EU03 Front display PC board

Fig. 3-1-1

2. CIRCUIT SYMBOLS AND SUPPLEMENTARY EXPLANATION

2-1. Precautions for Part Replacement

- In the schematic diagram, parts marked ⚠ (ex. ⚠ F801) are critical part to meet the safety regulations, so always use the parts bearing specified part codes (SN) when replacing them.
- Using the parts other than those specified shall violate the regulations, and may cause troubles such as operation failures, fire etc.

2-2. Solid Resistor Indication

Unit	None ....Ω K ....kΩ M ....MΩ
Tolerance	None ....±5% B ....±0.1% C ....±0.25% D ....±0.5% F ....±1% G ....±2% K ....±10% M ....±20%
Rated Wattage	(1) Chip Parts None ....1/16W (2) Other Parts None ....1/6W Other than above, described in the Circuit Diagram.
Type	None ....Carbon film S ....Solid R ....Oxide metal film W ....Metal film W ....Cement FR ....Fusible

Eg. 1

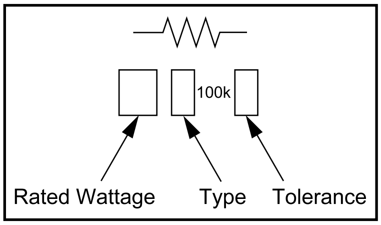
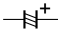
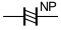
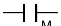
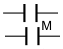
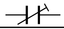

100k
Rated Wattage
Type
Tolerance

FIg. 3-2-1

2-3. Capacitance Indication

Symbol	 ....Electrolytic, Special electrolytic  ....Non polarity electrolytic  ....Ceramic, plastic  ....Film  ....Trimmer
Unit	None ....F μ ....μF p ....pF
Rated voltage	None ....50V For other than 50V and electrolytic capacitors, described in the Circuit Diagram.
Tolerance	(1) Ceramic, plastic, and film capacitors of which capacitance are more than 10 pF. None ....±5% or more B ....±0.1% C ....±0.25% D ....±0.5% F ....±1% G ....±2% (2) Ceramic, plastic, and film capacitors of which capacitance are 10 pF or less. None ....more than ±5% pF B ....±0.1 pF C ....±0.25 pF (3) Electrolytic, Trimmer Tolerance is not described.
Temperature characteristic (Ceramic capacitor)	None ....SL For others, temperature characteristics are described. (For capacitors of 0.01 μF and no indications are described as F.)
Static electricity capacity (Ceramic capacitor)	Sometimes described with abbreviated letters as shown in Eg. 3.

Eg. 2

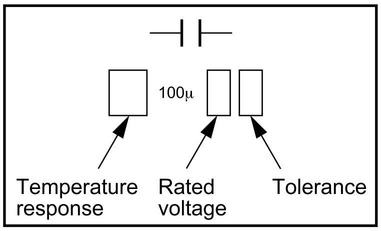

100μ
Temperature response
Rated voltage
Tolerance

Fig. 3-2-2

Eg. 3

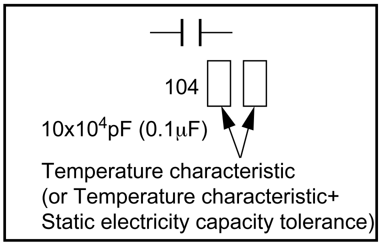

104
10x10^{4}pF (0.1μF)
Temperature characteristic
(or Temperature characteristic+
Static electricity capacity tolerance)

Fig. 3-2-3

2-4. Inductor Indication

Unit	None .... H µ .... µH m .... mH
Tolerance	None .... ±5% B .... ±0.1% C .... ±0.25% D .... ±0.5% F .... ±1% G .... ±2% K .... ±10% M .... ±20%

Eg. 4

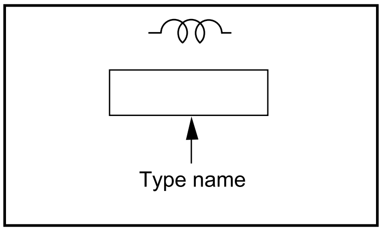


Fig. 3-2-4

2-5. Waveform and Voltage Measurement

- The waveforms for CD/DVD and RF shown in the circuit diagrams are obtained when a test disc is played back.
- All voltage values except the waveforms are expressed in DC and measured by a digital voltmeter.

2-6. Others

- The parts indicated with "NC" or "KETU" etc. are not used in the circuits of this model.

Eg. 5

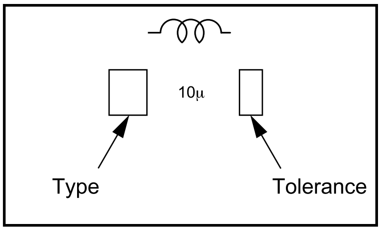


Fig. 3-2-5

3. PRINTED WIRING BOARD AND SCHEMATIC DIAGRAM

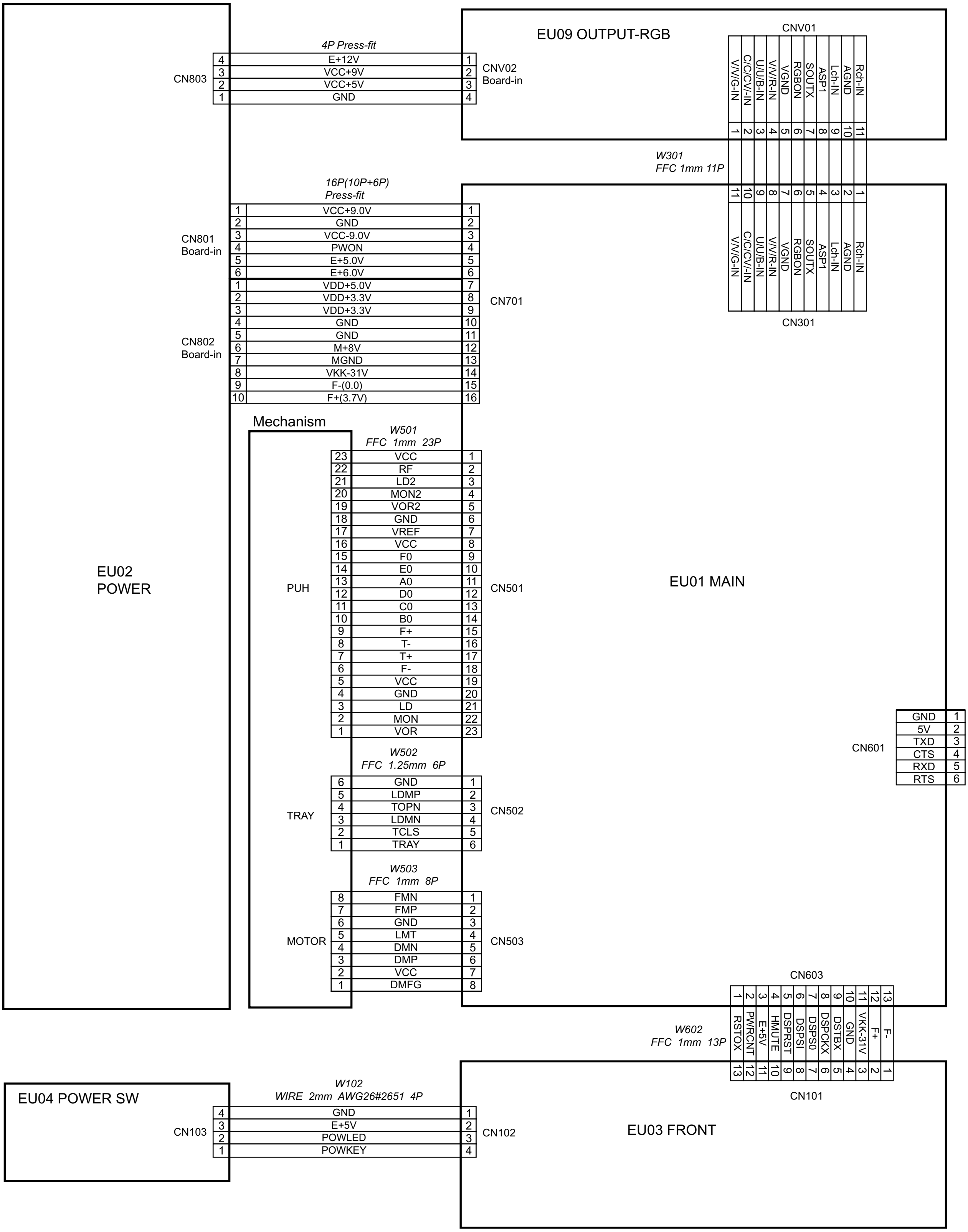

EU02 POWER
EU09 OUTPUT-RGB
EU01 MAIN
EU03 FRONT
EU04 POWER SW
Mechanism
PUH
TRAY
MOTOR
CN803
4P Press-fit
4 E+12V 1
3 VCC+9V 2
2 VCC+5V 3
1 GND 4
CNV02 Board-in
CNV01
1 V/V/G-IN
2 C/C/CV/-IN
3 U/U/B-IN
4 V/V/R-IN
5 VGND
6 RGBON
7 SOUTX
8 ASP1
9 Lch-IN
10 AGND
11 Rch-IN
W301 FFC 1mm 11P
CN301
11 V/V/G-IN
10 C/C/CV/-IN
9 U/U/B-IN
8 V/V/R-IN
7 VGND
6 RGBON
5 SOUTX
4 ASP1
3 Lch-IN
2 AGND
1 Rch-IN
16P(10P+6P) Press-fit
CN801 Board-in
1 VCC+9.0V 1
2 GND 2
3 VCC-9.0V 3
4 PWON 4
5 E+5.0V 5
6 E+6.0V 6
CN802 Board-in
1 VDD+5.0V 7
2 VDD+3.3V 8
3 VDD+3.3V 9
4 GND 10
5 GND 11
6 M+8V 12
7 MGND 13
8 VKK-31V 14
9 F-(0.0) 15
10 F+(3.7V) 16
CN701
W501 FFC 1mm 23P
23 VCC 1
22 RF 2
21 LD2 3
20 MON2 4
19 VOR2 5
18 GND 6
17 VREF 7
16 VCC 8
15 F0 9
14 E0 10
13 A0 11
12 D0 12
11 C0 13
10 B0 14
9 F+ 15
8 T- 16
7 T+ 17
6 F- 18
5 VCC 19
4 GND 20
3 LD 21
2 MON 22
1 VOR 23
CN501
W502 FFC 1.25mm 6P
6 GND 1
5 LDMP 2
4 TOPN 3
3 LDMN 4
2 TCLS 5
1 TRAY 6
CN502
W503 FFC 1mm 8P
8 FMN 1
7 FMP 2
6 GND 3
5 LMT 4
4 DMN 5
3 DMP 6
2 VCC 7
1 DMFG 8
CN503
CN601
GND 1
5V 2
TXD 3
CTS 4
RXD 5
RTS 6
CN603
W602 FFC 1mm 13P
1 RSTOX 13
2 PWRCNT 12
3 E+5V 11
4 HMUTE 10
5 DSPRST 9
6 DSPSI 8
7 DSPS0 7
8 DSPCKX 6
9 DSTBX 5
10 GND 4
11 VKK-31V 3
12 F+ 2
13 F- 1
CN101
W102 WIRE 2mm AWG26#2651 4P
CN103
4 GND 1
3 E+5V 2
2 POWLED 3
1 POWKEY 4
CN102

Fig. 3-3-1

4. BLOCK DIAGRAMS

4-1. Overall Block Diagram

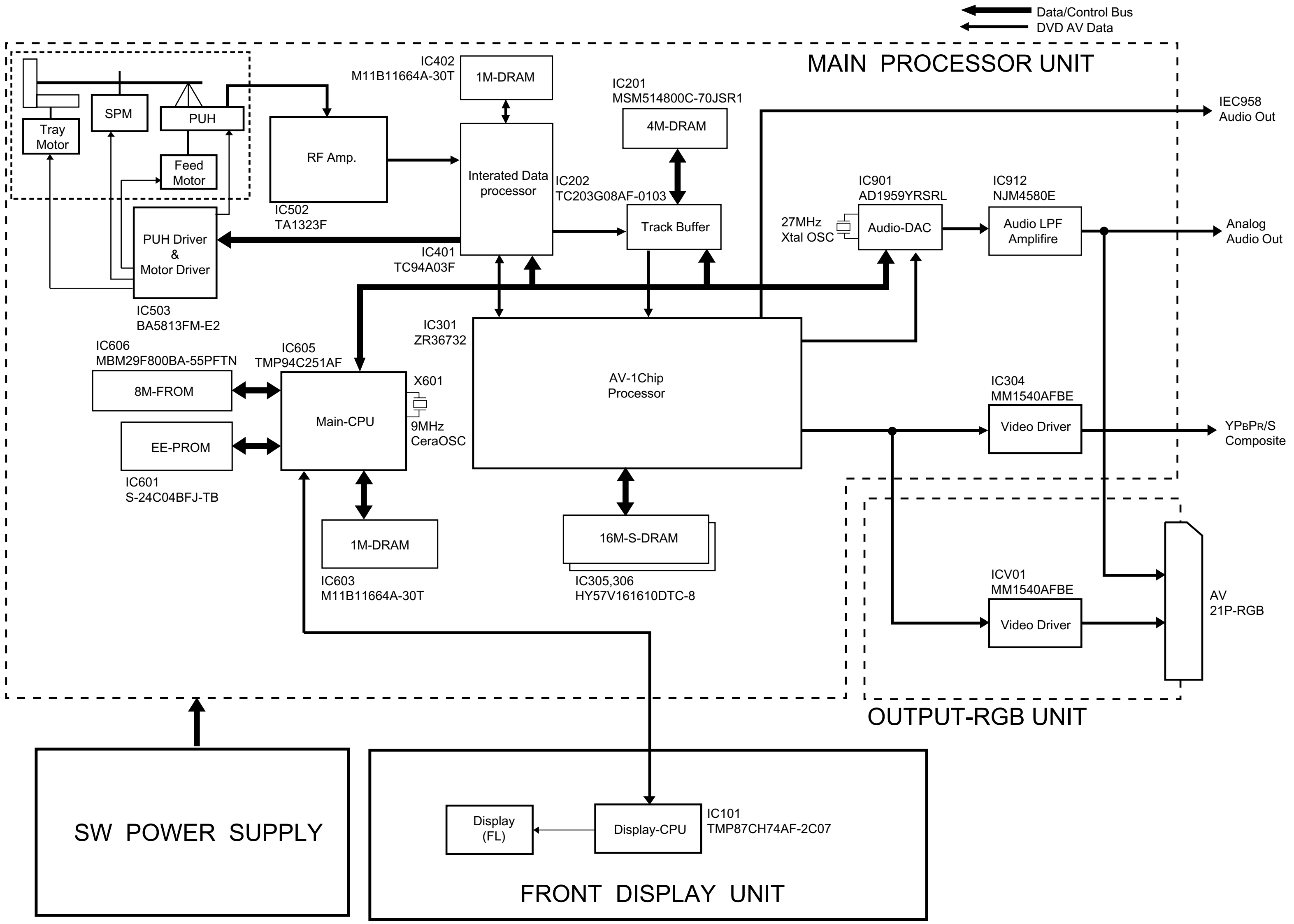

Data/Control Bus
DVD AV Data
MAIN PROCESSOR UNIT
Tray Motor
SPM
PUH
Feed Motor
IC402
M11B11664A-30T
1M-DRAM
RF Amp.
IC502
TA1323F
Interated Data processor
IC202
TC203G08AF-0103
IC401
TC94A03F
IC201
MSM514800C-70JSR1
4M-DRAM
Track Buffer
27MHz
Xtal OSC
IC901
AD1959YRSRL
Audio-DAC
IC912
NJM4580E
Audio LPF Amplifire
IEC958
Audio Out
Analog
Audio Out
PUH Driver & Motor Driver
IC503
BA5813FM-E2
IC606
MBM29F800BA-55PFTN
8M-FROM
IC605
TMP94C251AF
Main-CPU
X601
9MHz
CeraOSC
EE-PROM
IC601
S-24C04BFJ-TB
1M-DRAM
IC603
M11B11664A-30T
IC301
ZR36732
AV-1Chip Processor
16M-S-DRAM
IC305,306
HY57V161610DTC-8
IC304
MM1540AFBE
Video Driver
YPBPR/S
Composite
ICV01
MM1540AFBE
Video Driver
AV
21P-RGB
OUTPUT-RGB UNIT
SW POWER SUPPLY
Display (FL)
Display-CPU
IC101
TMP87CH74AF-2C07
FRONT DISPLAY UNIT

Fig.3-4-1

4-2. Power Supply Block Diagram

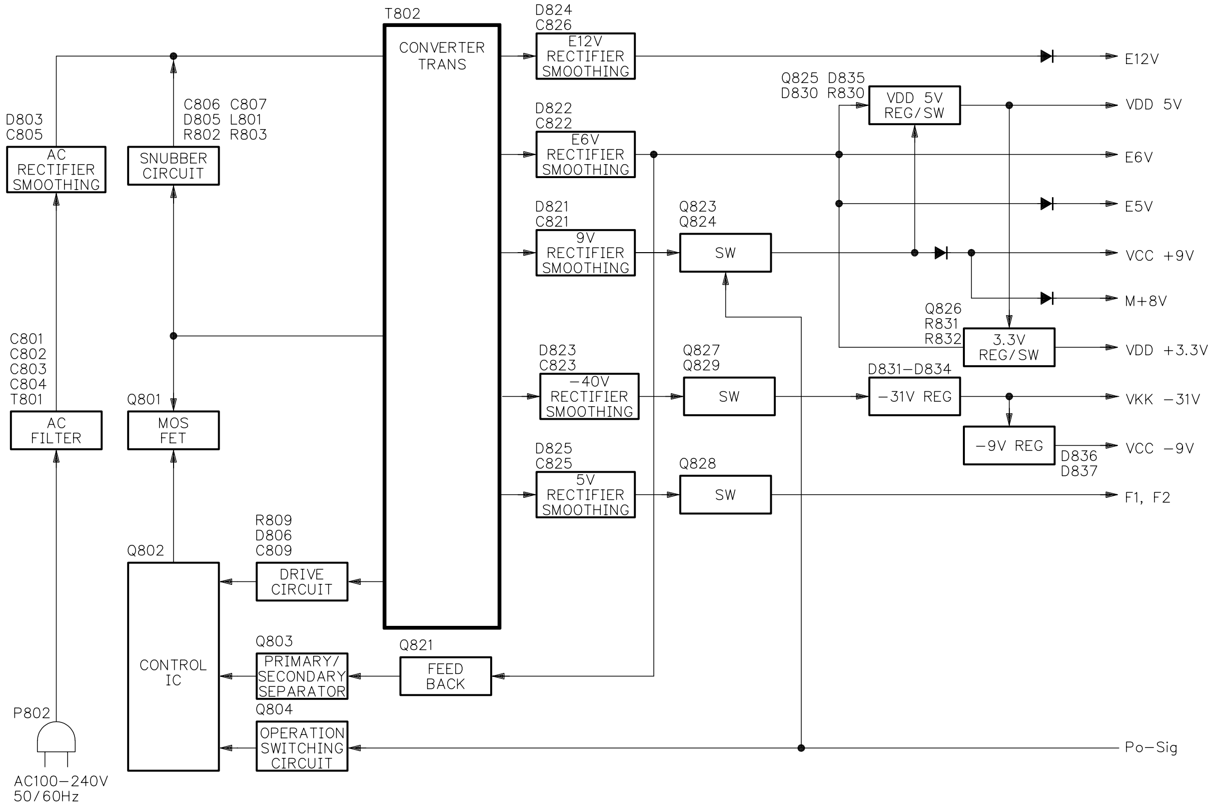

T802
CONVERTER TRANS
D824
C826
E12V RECTIFIER SMOOTHING
E12V
Q825 D835
D830 R830
VDD 5V REG/SW
VDD 5V
D803
C805
AC RECTIFIER SMOOTHING
C806 C807
D805 L801
R802 R803
SNUBBER CIRCUIT
D822
C822
E6V RECTIFIER SMOOTHING
E6V
E5V
D821
C821
9V RECTIFIER SMOOTHING
Q823
Q824
SW
VCC +9V
M+8V
Q826
R831
R832
3.3V REG/SW
VDD +3.3V
C801
C802
C803
C804
T801
AC FILTER
Q801
MOS FET
D823
C823
−40V RECTIFIER SMOOTHING
Q827
Q829
SW
D831−D834
−31V REG
VKK −31V
−9V REG
D836
D837
VCC −9V
D825
C825
5V RECTIFIER SMOOTHING
Q828
SW
F1, F2
R809
D806
C809
Q802
DRIVE CIRCUIT
CONTROL IC
Q803
PRIMARY/ SECONDARY SEPARATOR
Q821
FEED BACK
Q804
OPERATION SWITCHING CIRCUIT
Po−Sig
P802
AC100−240V
50/60Hz

Fig. 3-4-2

4-3. Front Display, Power Switch Block Diagram

4-3-1. Front Display

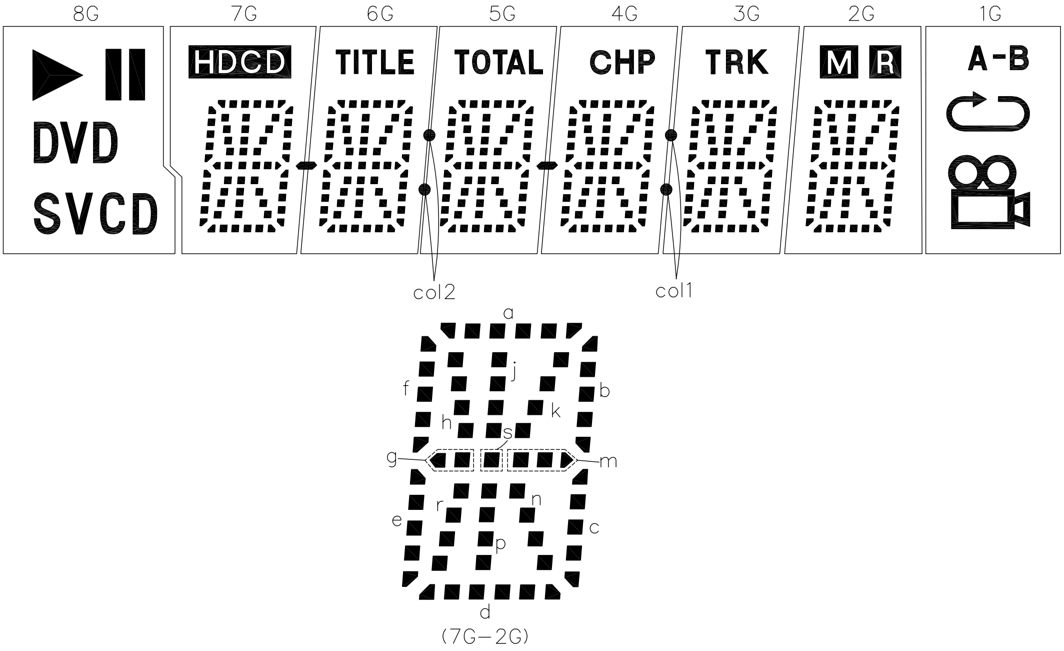

8G
7G
6G
5G
4G
3G
2G
1G
DVD
SVCD
HDCD
TITLE
TOTAL
CHP
TRK
M
R
A-B
col2
col1
a
j
f
b
k
h
s
g
m
r
n
e
c
p
d
(7G—2G)

Fig. 3-4-3

4-3-2. Front Display Pattern

	8G	7G	6G	5G	4G	3G	2G	1G
P1	▶	a	a	a	a	a	a	A
P2	❚❚	f	f	f	f	f	f	-B
P3	DVD	h	h	h	h	h	h	🔁
P4	S	j	j	j	j	j	j	🎥
P5	V	k	k	k	k	k	k	–
P6	CD	b	b	b	b	b	b	–
P7	–	g	g	g	g	g	g	–
P8	–	s	s	s	s	s	s	–
P9	–	m	m	m	m	m	m	–
P10	–	e	e	e	e	e	e	–
P11	–	r	r	r	r	r	r	–
P12	–	p	p	p	p	p	p	–
P13	–	n	n	n	n	n	n	–
P14	–	c	c	c	c	c	c	–
P15	–	d	d	d	d	d	d	–
P16	–	–	col2		col1		M	–
P17	–	▬		▬		–	R	–
P18	–	HDCD	TITLE	TOTAL	CHP	TRK	–	–

Fig. 3-4-4

4-3-3. Front Display, Power Switch Block Diagram

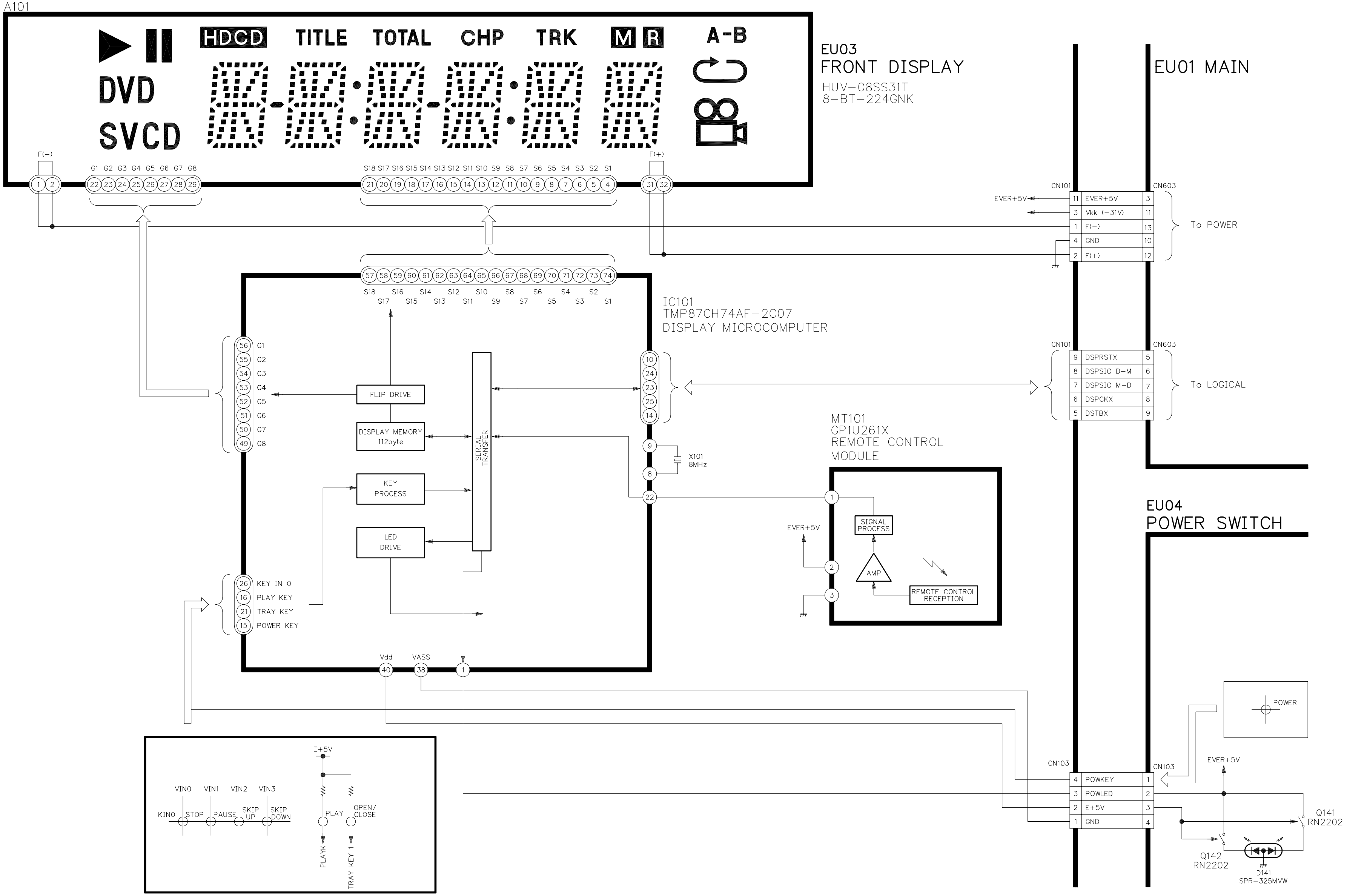

A101
HDCD
TITLE
TOTAL
CHP
TRK
M
R
A-B
DVD
SVCD
F(−)
G1 G2 G3 G4 G5 G6 G7 G8
S18 S17 S16 S15 S14 S13 S12 S11 S10 S9 S8 S7 S6 S5 S4 S3 S2 S1
F(+)
EU03
FRONT DISPLAY
HUV-08SS31T
8-BT-224GNK
EU01 MAIN
CN101
CN603
EVER+5V
11 EVER+5V 3
3 Vkk (−31V) 11
1 F(−) 13
4 GND 10
2 F(+) 12
To POWER
IC101
TMP87CH74AF-2C07
DISPLAY MICROCOMPUTER
9 DSPRSTX 5
8 DSPSIO D-M 6
7 DSPSIO M-D 7
6 DSPCKX 8
5 DSTBX 9
To LOGICAL
FLIP DRIVE
DISPLAY MEMORY 112byte
SERIAL TRANSFER
KEY PROCESS
LED DRIVE
X101 8MHz
MT101
GP1U261X
REMOTE CONTROL
MODULE
SIGNAL PROCESS
AMP
REMOTE CONTROL RECEPTION
EU04
POWER SWITCH
KEY IN 0
PLAY KEY
TRAY KEY
POWER KEY
Vdd
VASS
E+5V
VIN0 VIN1 VIN2 VIN3
KIN0
STOP
PAUSE
SKIP UP
SKIP DOWN
PLAY
OPEN/CLOSE
PLAYK
TRAY KEY 1
POWER
CN103
4 POWKEY 1
3 POWLED 2
2 E+5V 3
1 GND 4
Q141
RN2202
Q142
RN2202
D141
SPR-325MVW

Fig. 3-4-5

4-4. Main Block Diagrams

4-4-1. Servo System Block Diagram

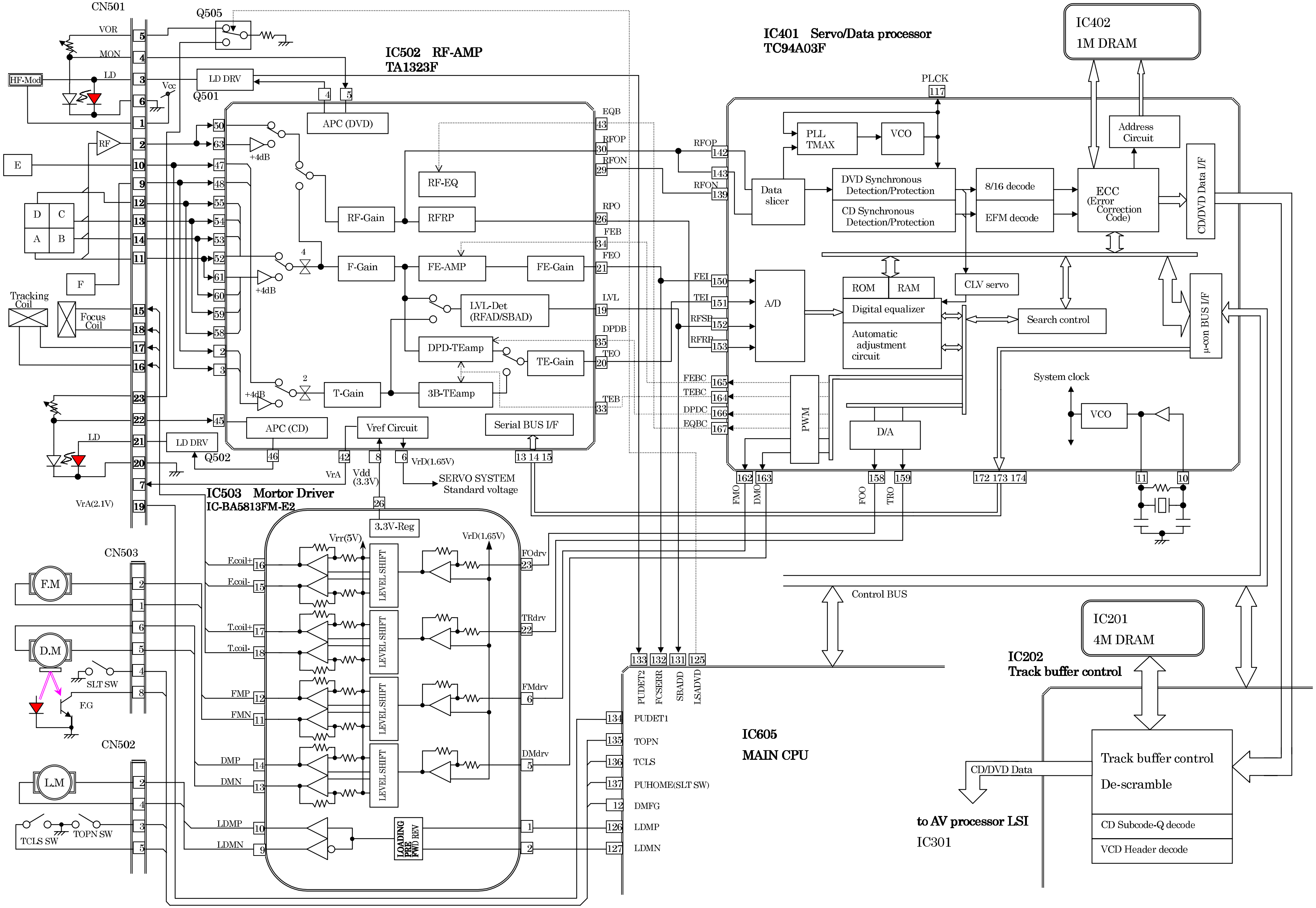

CN501
Q505
VOR
MON
LD
HF-Mod
Vcc
Q501
LD DRV
IC502 RF-AMP
TA1323F
APC (DVD)
RF
E
D
C
A
B
F
Tracking Coil
Focus Coil
+4dB
RF-EQ
RF-Gain
RFRP
F-Gain
FE-AMP
FE-Gain
LVL-Det
(RFAD/SBAD)
DPD-TEamp
TE-Gain
T-Gain
3B-TEamp
APC (CD)
Vref Circuit
Serial BUS I/F
EQB
RFOP
RFON
RPO
FEB
FEO
LVL
DPDB
TEO
TEB
LD DRV
Q502
VrA
Vdd
(3.3V)
VrD(1.65V)
SERVO SYSTEM
Standard voltage
VrA(2.1V)
IC503 Mortor Driver
IC-BA5813FM-E2
3.3V-Reg
Vrr(5V)
VrD(1.65V)
LEVEL SHIFT
F.coil+
F.coil-
T.coil+
T.coil-
FMP
FMN
DMP
DMN
LDMP
LDMN
FOdrv
TRdrv
FMdrv
DMdrv
LOADING
PRE
FWD REV
CN503
F.M
D.M
SLT SW
F.G
CN502
L.M
TCLS SW
TOPN SW
IC401 Servo/Data processor
TC94A03F
PLCK
PLL
TMAX
VCO
Data slicer
DVD Synchronous Detection/Protection
CD Synchronous Detection/Protection
8/16 decode
EFM decode
ECC
(Error Correction Code)
Address Circuit
CD/DVD Data I/F
IC402
1M DRAM
RFOP
RFON
FEI
TEI
RFSP
RFRP
FEBC
TEBC
DPDC
EQBC
A/D
ROM
RAM
Digital equalizer
Automatic adjustment circuit
CLV servo
Search control
μ-con BUS I/F
PWM
D/A
System clock
VCO
FMO
DMO
FOO
TRO
Control BUS
PUDET2
FCSERR
SBADD
LSADVD
PUDET1
TOPN
TCLS
PUHOME(SLT SW)
DMFG
LDMP
LDMN
IC605
MAIN CPU
IC201
4M DRAM
IC202
Track buffer control
Track buffer control
De-scramble
CD Subcode-Q decode
VCD Header decode
CD/DVD Data
to AV processor LSI
IC301

Fig.3-4-6

4-4-2. Logical System Block Diagram

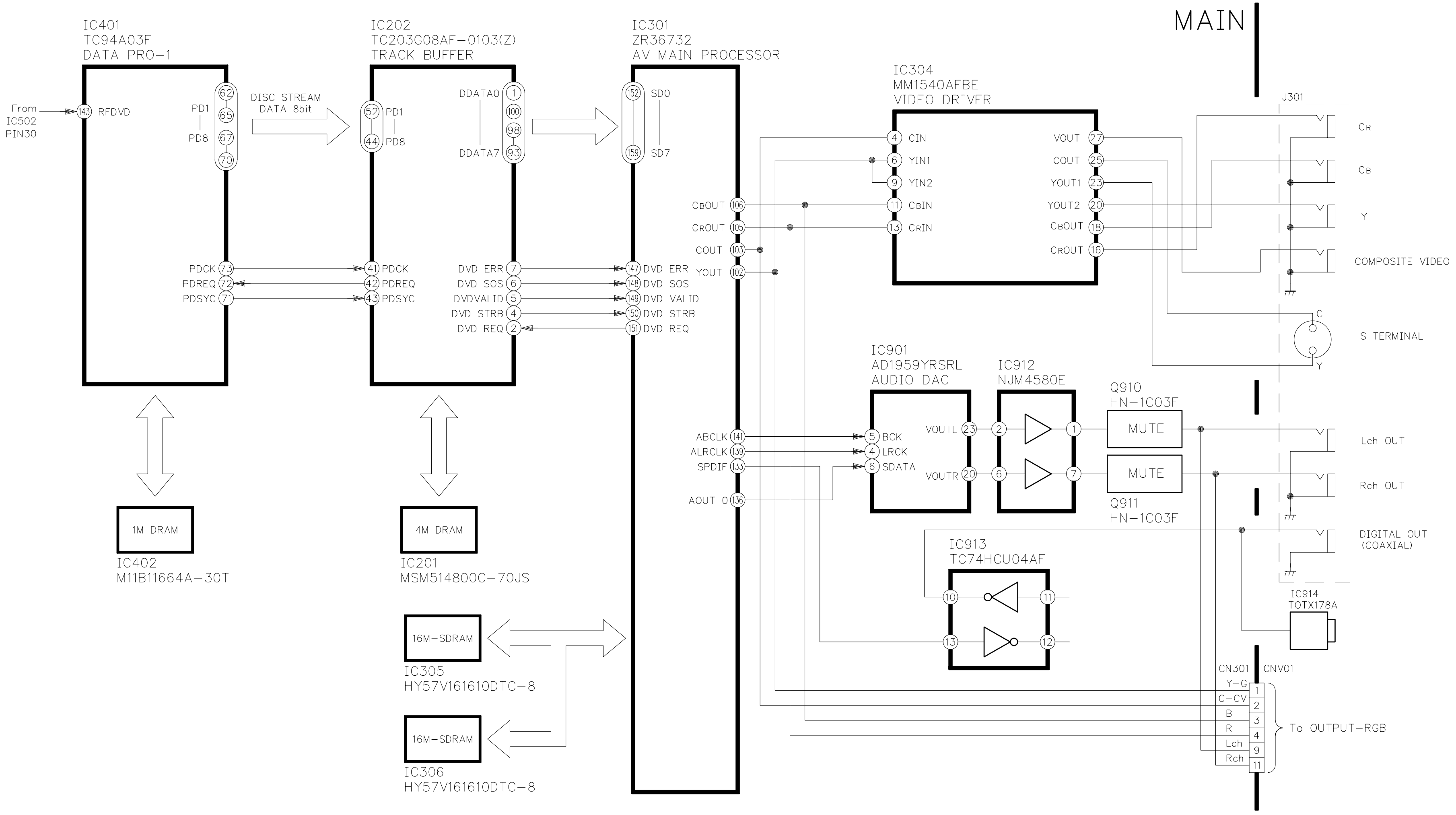

IC401
TC94A03F
DATA PRO-1
From IC502 PIN30
143 RFDVD
PD1
PD8
62
65
67
70
DISC STREAM DATA 8bit
PDCK 73
PDREQ 72
PDSYC 71
IC202
TC203G08AF-0103(Z)
TRACK BUFFER
52 PD1
44 PD8
DDATA0 1
100
98
DDATA7 93
41 PDCK
42 PDREQ
43 PDSYC
DVD ERR 7
DVD SOS 6
DVDVALID 5
DVD STRB 4
DVD REQ 2
IC301
ZR36732
AV MAIN PROCESSOR
152 SD0
159 SD7
147 DVD ERR
148 DVD SOS
149 DVD VALID
150 DVD STRB
151 DVD REQ
CBOUT 106
CROUT 105
COUT 103
YOUT 102
ABCLK 141
ALRCLK 139
SPDIF 133
AOUT 0 136
1M DRAM
IC402
M11B11664A-30T
4M DRAM
IC201
MSM514800C-70JS
16M-SDRAM
IC305
HY57V161610DTC-8
16M-SDRAM
IC306
HY57V161610DTC-8
MAIN
IC304
MM1540AFBE
VIDEO DRIVER
4 CIN
6 YIN1
9 YIN2
11 CBIN
13 CRIN
VOUT 27
COUT 25
YOUT1 23
YOUT2 20
CBOUT 18
CROUT 16
J301
CR
CB
Y
COMPOSITE VIDEO
C
Y
S TERMINAL
IC901
AD1959YRSRL
AUDIO DAC
5 BCK
4 LRCK
6 SDATA
VOUTL 23
VOUTR 20
IC912
NJM4580E
2
1
6
7
Q910
HN-1C03F
MUTE
MUTE
Q911
HN-1C03F
Lch OUT
Rch OUT
DIGITAL OUT (COAXIAL)
IC913
TC74HCU04AF
10
11
13
12
IC914
TOTX178A
CN301
CNV01
Y-G 1
C-CV 2
B 3
R 4
Lch 9
Rch 11
To OUTPUT-RGB

Fig. 3-4-7

4-5. Output-RGB Block Diagram

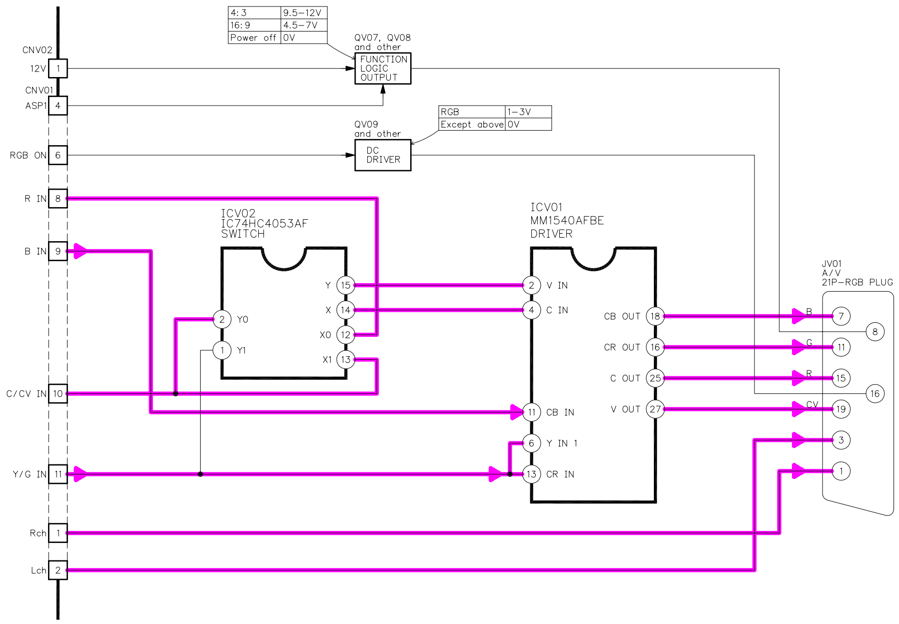

4:3 9.5–12V
16:9 4.5–7V
Power off 0V
QV07, QV08 and other
FUNCTION LOGIC OUTPUT
RGB 1–3V
Except above 0V
QV09 and other
DC DRIVER
CNV02
12V 1
CNV01
ASP1 4
RGB ON 6
R IN 8
B IN 9
C/CV IN 10
Y/G IN 11
Rch 1
Lch 2
ICV02
IC74HC4053AF
SWITCH
2 Y0
1 Y1
Y 15
X 14
X0 12
X1 13
ICV01
MM1540AFBE
DRIVER
2 V IN
4 C IN
11 CB IN
6 Y IN 1
13 CR IN
CB OUT 18
CR OUT 16
C OUT 25
V OUT 27
JV01
A/V
21P–RGB PLUG
B
G
R
CV
7
8
11
15
16
19
3
1

Fig. 3-4-8

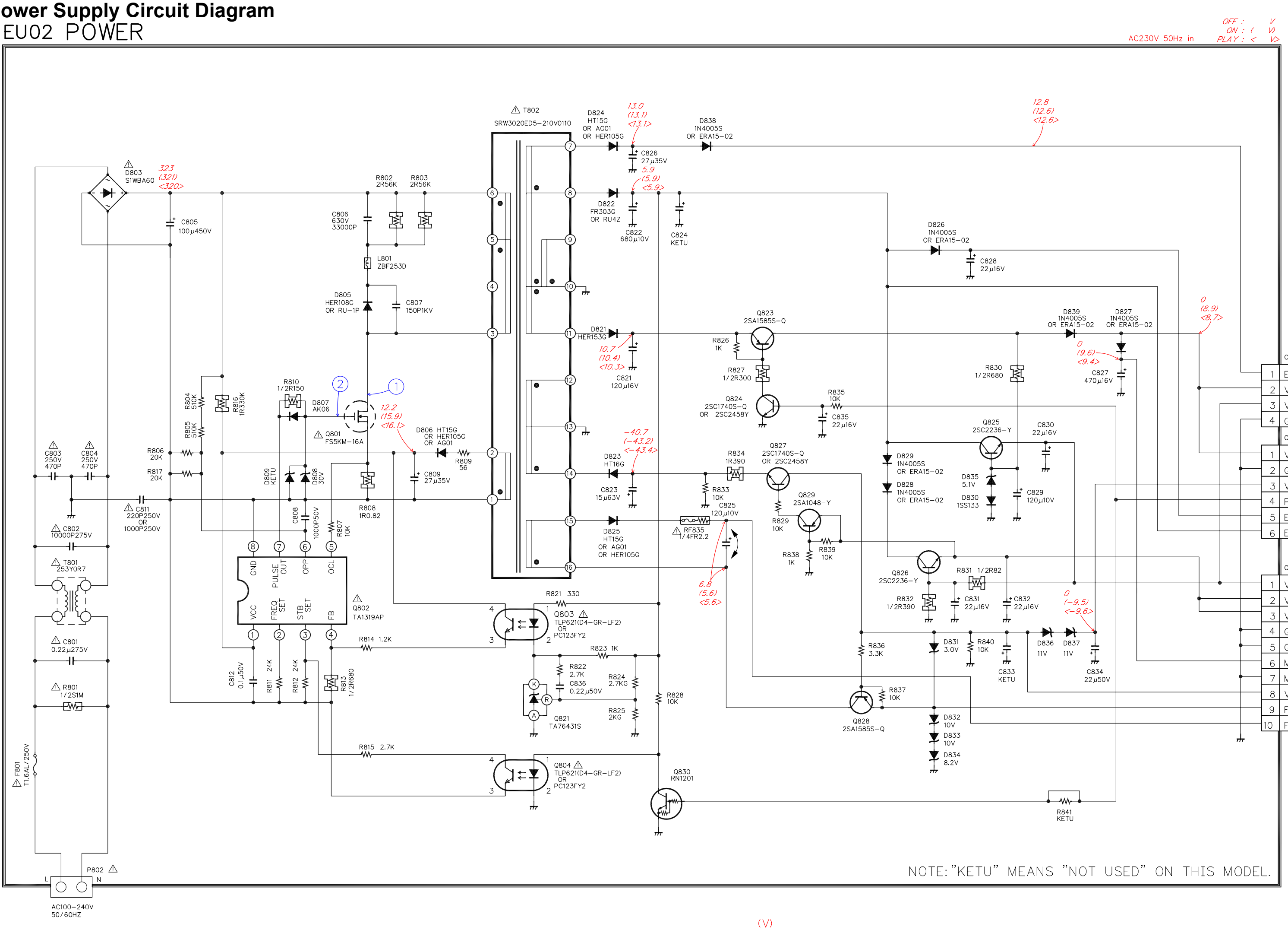
1 2 3 4 5 6 7 8 9 10

A B C D E F G

5. CIRCUIT DIAGRAMS

5-1. Power Supply Circuit Diagram

EU02 POWER



OFF : V
ON : (V)
PLAY : < V>
AC230V 50Hz in
T802
SRW3020ED5-210V0110
D803
S1WBA60
323
(321)
<320>
C805
100μ450V
R802
2R56K
R803
2R56K
C806
630V
33000P
L801
ZBF253D
D805
HER108G
OR RU-1P
C807
150P1KV
D824
HT15G
OR AG01
OR HER105G
13.0
(13.1)
<13.1>
C826
27μ35V
D838
1N4005S
OR ERA15-02
12.8
(12.6)
<12.6>
D822
FR303G
OR RU4Z
5.9
(5.9)
<5.9>
C822
680μ10V
C824
KETU
D826
1N4005S
OR ERA15-02
C828
22μ16V
D821
HER153G
10.7
(10.4)
<10.3>
C821
120μ16V
Q823
2SA1585S-Q
R826
1K
R827
1/2R300
D839
1N4005S
OR ERA15-02
D827
1N4005S
OR ERA15-02
0
(8.9)
<8.7>
0
(9.6)
<9.4>
C827
470μ16V
R830
1/2R680
Q824
2SC1740S-Q
OR 2SC2458Y
R835
10K
C835
22μ16V
Q825
2SC2236-Y
C830
22μ16V
R810
1/2R150
D807
AK06
Q801
FS5KM-16A
12.2
(15.9)
<16.1>
D806 HT15G
OR HER105G
OR AG01
R809
56
C809
27μ35V
R808
1R0.82
C808
1000P50V
R807
10K
D809
KETU
D808
30V
R804
510K
R816
1R330K
R805
510K
R806
20K
R817
20K
C803
250V
470P
C804
250V
470P
C811
220P250V
OR
1000P250V
C802
10000P275V
T801
253Y0R7
C801
0.22μ275V
R801
1/2S1M
F801
T1.6AL/250V
P802
L
N
AC100-240V
50/60HZ
Q802
TA1319AP
GND
PULSE OUT
OPP
OCL
VCC
FREQ SET
STB SET
FB
C812
0.1μ50V
R811 24K
R812 24K
R813
1/2R680
R814 1.2K
R815 2.7K
D823
HT16G
-40.7
(-43.2)
<-43.4>
C823
15μ63V
D825
HT15G
OR AG01
OR HER105G
R834
1R390
Q827
2SC1740S-Q
OR 2SC2458Y
R833
10K
C825
120μ10V
RF835
1/4FR2.2
6.8
(5.6)
<5.6>
Q829
2SA1048-Y
R829
10K
R838
1K
R839
10K
D829
1N4005S
OR ERA15-02
D828
1N4005S
OR ERA15-02
D835
5.1V
D830
1SS133
C829
120μ10V
Q826
2SC2236-Y
R831 1/2R82
R832
1/2R390
C831
22μ16V
C832
22μ16V
0
(-9.5)
<-9.6>
R821 330
Q803
TLP621(D4-GR-LF2)
OR
PC123FY2
R823 1K
R822
2.7K
C836
0.22μ50V
R824
2.7KG
R825
2KG
R828
10K
Q821
TA76431S
R836
3.3K
D831
3.0V
R840
10K
C833
KETU
D836
11V
D837
11V
C834
22μ50V
R837
10K
Q828
2SA1585S-Q
D832
10V
D833
10V
D834
8.2V
Q804
TLP621(D4-GR-LF2)
OR
PC123FY2
Q830
RN1201
R841
KETU
CN803
1 E+12V
2 VCC+9V
3 VDD+5V
4 GND
CN801
1 VCC+9V
2 GND
3 VCC-9V
4 Po Sig
5 E5V
6 E+6V
CN802
1 VDD+5V
2 VDD+3.3V
3 VDD+3.3V
4 GND
5 GND
6 M+8V
7 MGND
8 VKK-31V
9 F-
10 F+
NOTE:"KETU" MEANS "NOT USED" ON THIS MODEL.

(V)

	Q802						Q821			Q823			Q824		
	1	2	3	4	6	8	K	R	A	E	C	B	E	C	B
OFF	12.2	1.5	0.5	2.8	3.0	0	4.0	2.5	0	10.7	0	10.7	0	10.7	0
ON	15.9	1.0	1.7	2.4	3.0	0	4.2	2.5	0	10.4	9.6	9.0	0	0.1	0.7
PLAY	16.1	1.0	1.7	2.3	3.0	0	4.2	2.5	0	10.3	9.4	8.8	0	0.1	0.7

(V)

	Q825			Q826			Q827			Q828			Q829			Q830		
	E	C	B	E	C	B	E	C	B	E	C	B	E	C	B	E	C	B
OFF	0	5.9	0	0	5.8	0	−40.7	0	−40.2	0	−6.7	0	0	−40.0	0	0	1.0	0
ON	5.0	5.9	5.7	3.4	4.4	4.1	−31.4	−31.3	−30.6	−27.7	−27.8	−28.4	2.6	3.3	3.4	0	0	4.8
PLAY	5.0	5.9	5.7	3.3	4.3	4.0	−31.4	−31.3	−30.6	−27.8	−27.9	−28.5	2.7	3.4	3.4	0	0	4.8

Fig. 3-5-1

Power Supply Circuit Diagram

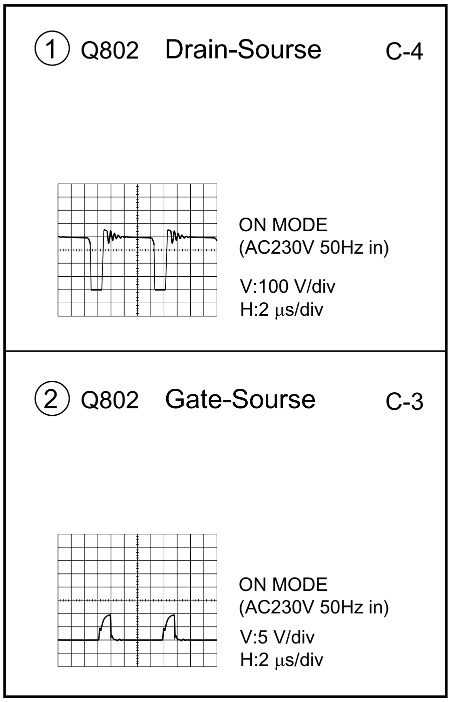


Fig. 3-5-2

5-2. Front Display, Power Switch Circuit Diagram

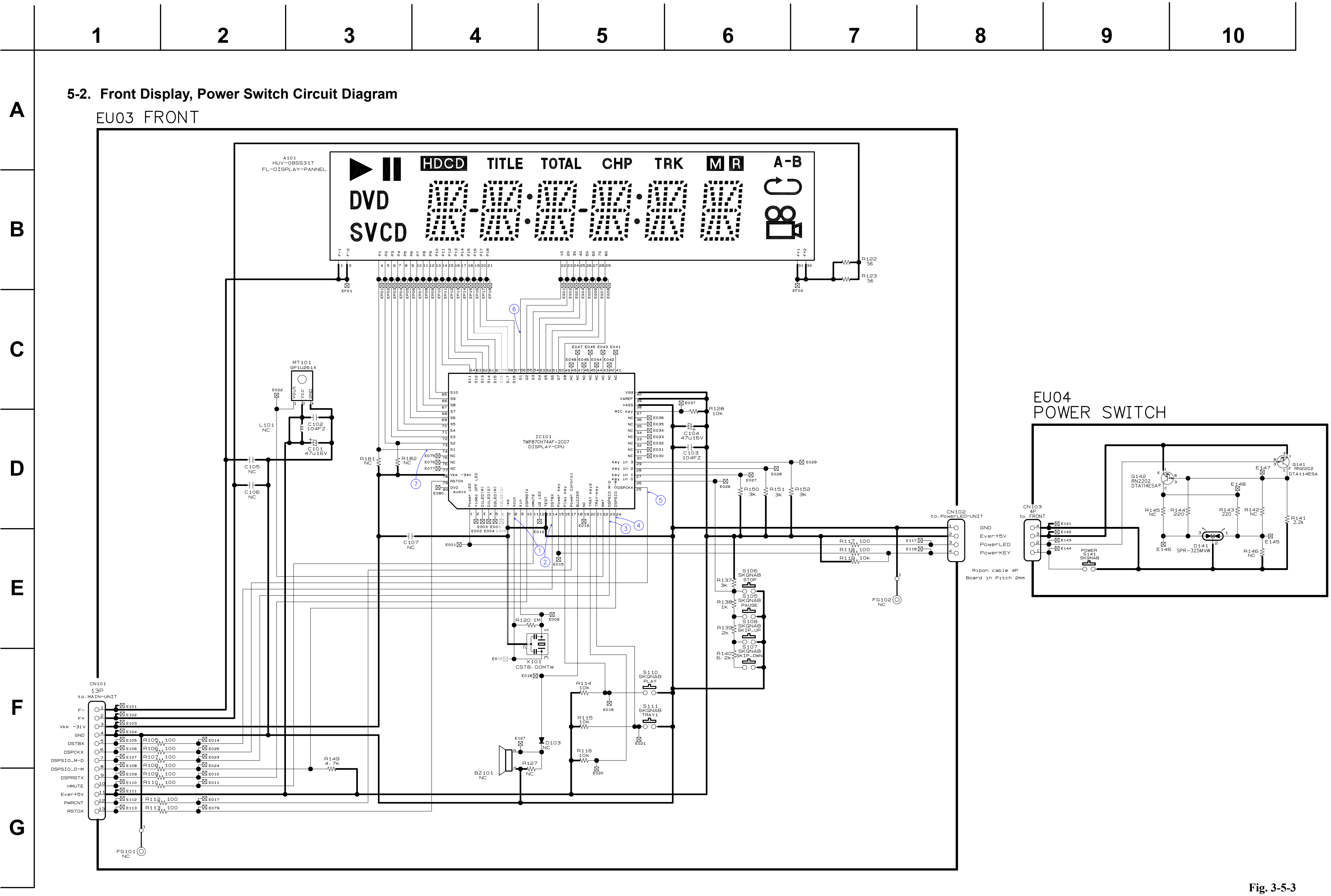
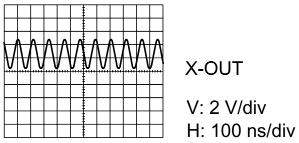

1
2
3
4
5
6
7
8
9
10
A
B
C
D
E
F
G
EU03 FRONT
A101
HUV-08SS31T
FL-DISPLAY-PANNEL
HDCD
TITLE
TOTAL
CHP
TRK
M
R
A-B
DVD
SVCD
R122
56
R123
56
EF01
EF02
MT101
GP1U261X
Vout
Vcc
GND
E022
L101
NC
C102
104FZ
C101
47u16V
C105
NC
C106
NC
IC101
TMP87CH74AF-2C07
DISPLAY-CPU
Vdd
VAREF
VASS
MIC key
key in 3
key in 2
key in 1
key in 0
ODSPCKX
Vkk -34V
RSTOX
DVD
Audio
Power LED
Video OFF LED
D1LED(R)
D2LED(G)
Vss
Xout
Xin
DSPRSTX
HMUTE
US LED
TEST
DSTBX
Power key
Play key
Power Control
BUZZER
TRAY key2
RMT
DSPSIO M-D
DSPSIO D-M
E047 E045 E043 E041
E048 E046 E044 E042
E037
R128
10k
C104
47u16V
C103
104FZ
E036
E035
E034
E033
E032
E031
E030
E029
E028
E027
E026
R150
3k
R151
3k
R152
3k
R181
NC
R182
NC
E075
E076
E077
E080
C107
NC
E001
E002 E004
E003 E005
E012
E015
E019
1
2
3
4
5
6
7
R120 1M
E009
X101
CST8.00MTW
E008
E018
D103
NC
E127
BZ101
NC
R127
NC
R114
10k
E016
R115
10k
E021
R116
10k
E020
S110
SKQNAB
PLAY
S111
SKQNAB
TRAY1
S106
SKQNAB
STOP
S105
SKQNAB
PAUSE
S108
SKQNAB
SKIP_UP
S107
SKQNAB
SKIP_DWN
R137
3k
R138
1k
R139
2k
R140
6.2k
R117 100
R118 100
R119 10k
E117
E118
FG102
NC
CN102
to.PowerLED-UNIT
GND
Ever+5V
PowerLED
PowerKEY
Ribon cable 4P
Board in Pitch 2mm
CN101
13P
to.MAIN-UNIT
F-
F+
Vkk -31V
GND
DSTBX
DSPCKX
DSPSIO_M-D
DSPSIO_D-M
DSPRSTX
HMUTE
Ever+5V
PWRCNT
RSTOX
E101
E102
E103
E104
E105
E106
E107
E108
E109
E110
E111
E112
E113
R105 100
R106 100
R107 100
R108 100
R109 100
R110 100
R112 100
R113 100
E014
E025
E023
E024
E010
E011
E017
E079
R149
4.7k
FG101
NC
EU04
POWER SWITCH
CN103
4P
to. FRONT
E141
E142
E143
E144
POWER
S141
SKQNAB
Q142
RN2202
DTA114ESA
Q141
RN2202
DTA114ESA
E147
E148
R145
NC
R144
220
R143
220
R142
NC
R141
2.2k
E146
D141
SPR-325MVW
E145
R146
NC

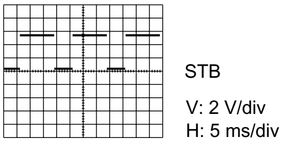
Fig. 3-5-3

Front Display, Power Switch Circuit Diagram

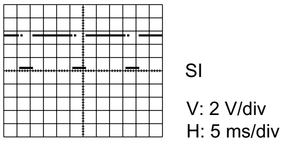
① IC101, Pin ⑧ E-4



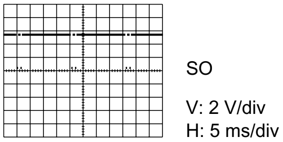
② IC101, Pin ⑭ E-5



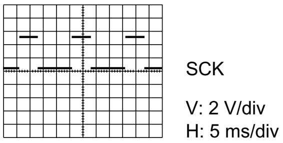
③ IC101, Pin ㉓ D-5



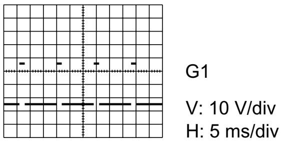
④ IC101, Pin ㉔ D-5



⑤ IC101, Pin ㉕ D-5



⑥ IC101, Pin (56) C-4



⑦ IC101, Pin (74) D-4

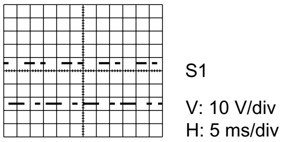
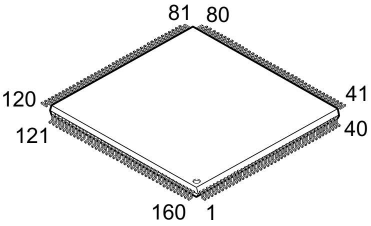


Fig. 3-5-4

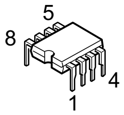
5-3. Main Circuit Diagrams

5-3-1. New Main ICs Information

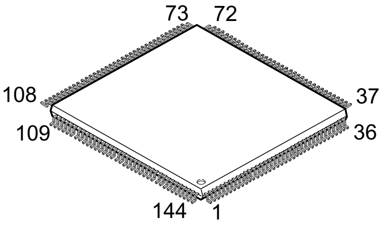
ZR36732


81
80
120
41
121
40
160
1

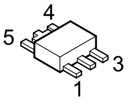
TA1319P/TA1319AP



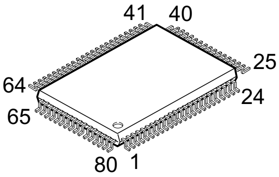
TMP94C251AF(Z)


73
72
108
37
109
36
144
1

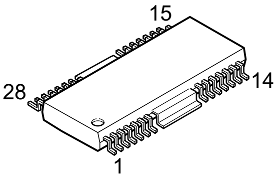
S-814A50AUC-BDO-T2



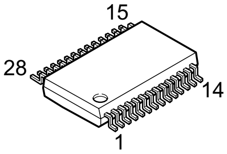
TMP87CH74AF-2C07


41
40
25
64
24
65
80
1

BA5813FM-E2



AD1959YRSRL



5-3-2. Main Circuit Diagram

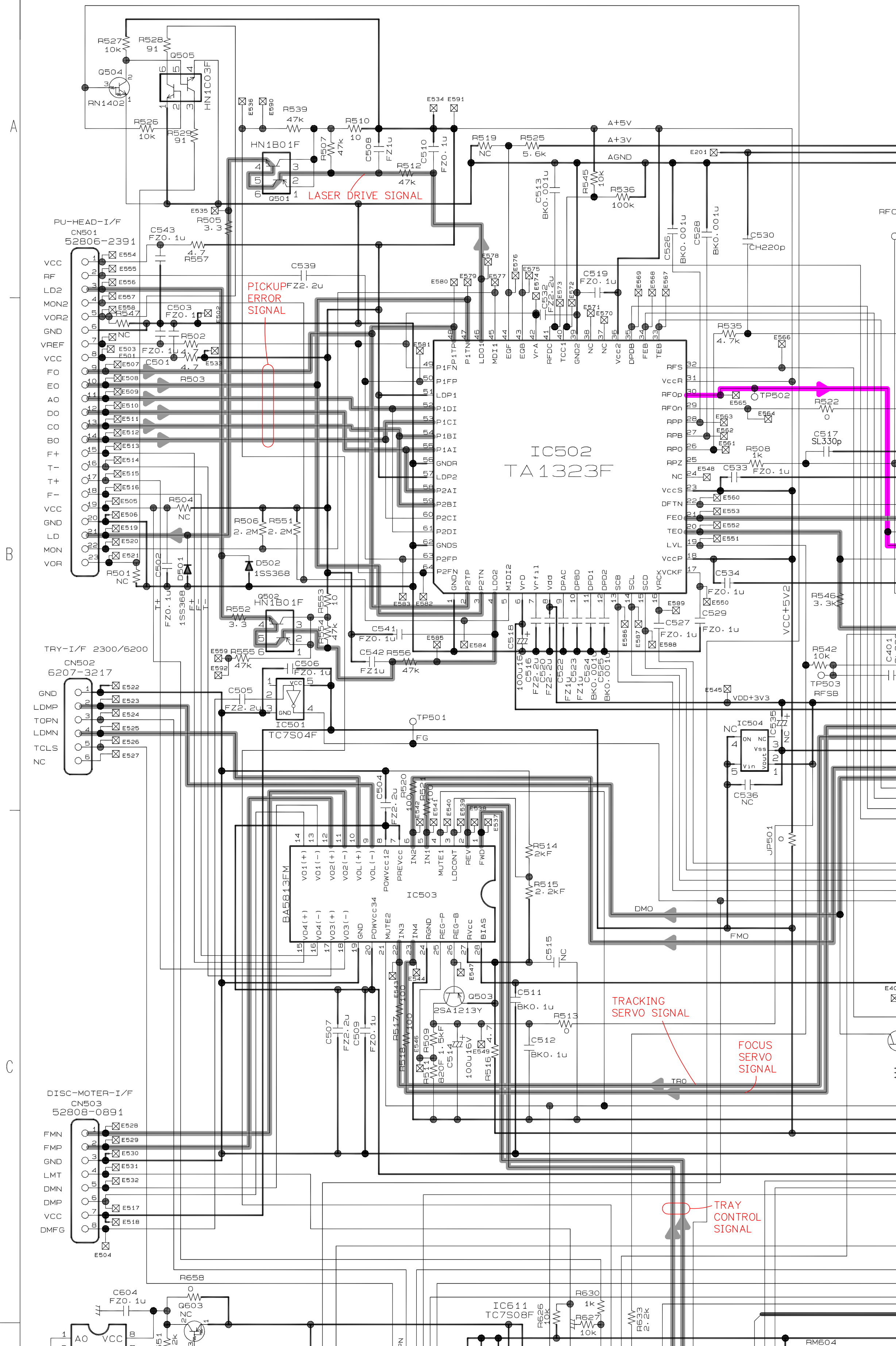
IC502 TA1323F
TC94A03F IC401
IC201
IC202 203G08F0103
IC605 TMP94CS251AF MPU
IC301 ZR36732 AV-MAIN-PROCESSOR
IC303
IC305 HY57V161610DTC-8
IC306 HY57V161610DTC-8
IC603
IC606
IC601 S24C01BFJ-TB
LASER DRIVE SIGNAL
PICKUP ERROR SIGNAL
FOCUS ERROR
TRACKING ERROR
FEED MOTOR SERVO SIGNAL
DISC MOTOR SERVO SIGNAL
TRACKING SERVO SIGNAL
FOCUS SERVO SIGNAL
TRAY CONTROL SIGNAL
ADDRESS BUS
DATA BUS
AUDIO SIGNAL L
AUDIO SIGNAL R
DIGITAL SIGNAL
COMPOSITE VIDEO SIGNAL
C SIGNAL
Y SIGNAL
PU-HEAD-I/F CN501 52806-2391
DISC-MOTER-I/F CN503
RS232C-I/F CN601
FRONT-MPU-I/F CN603
POWER-SUPPLY CN701
J301 YKC22-0494
64MSDRAM SYSTEM
16MSDRAM SYSTEM

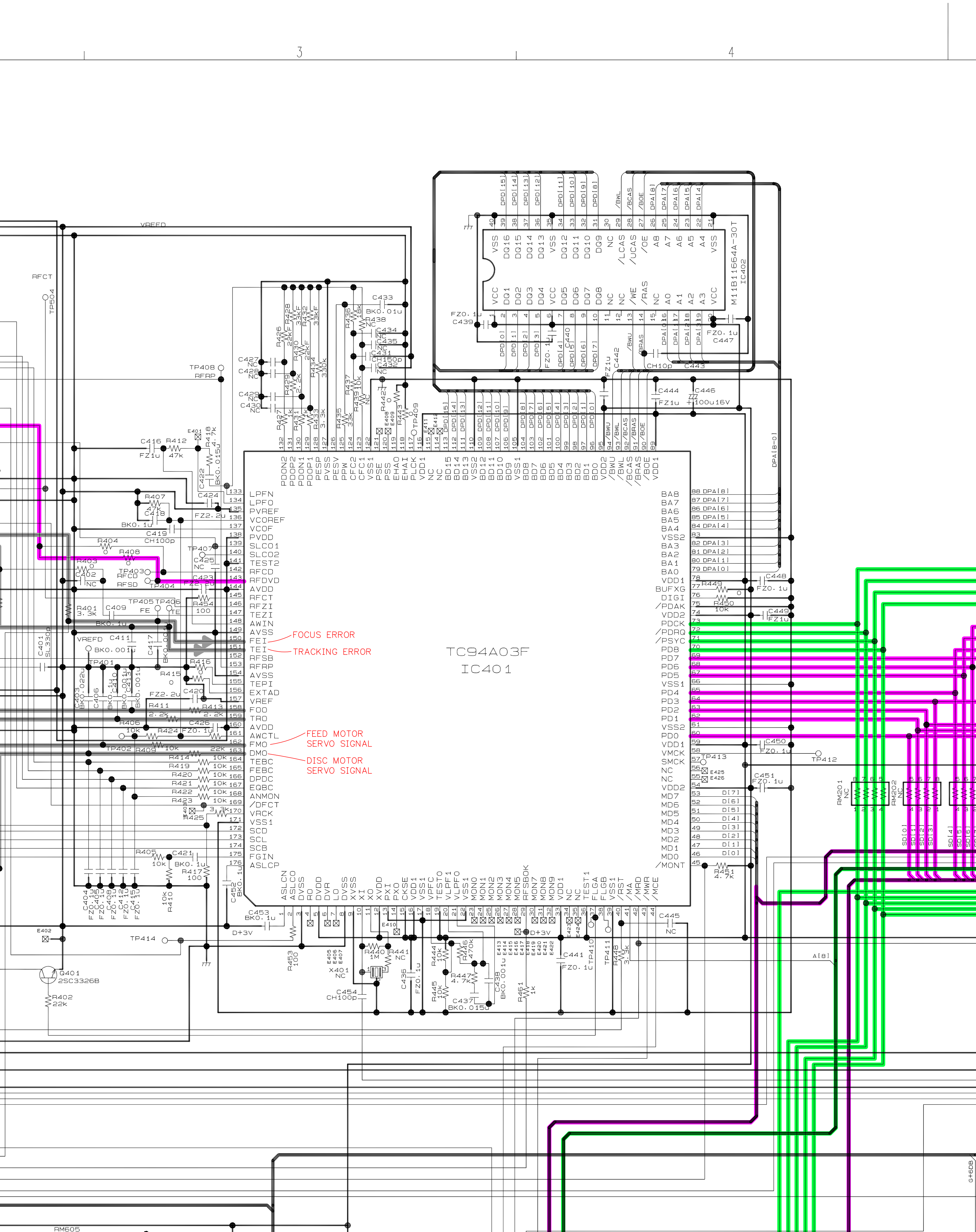
SYMBOL DIFFERENCE LIST

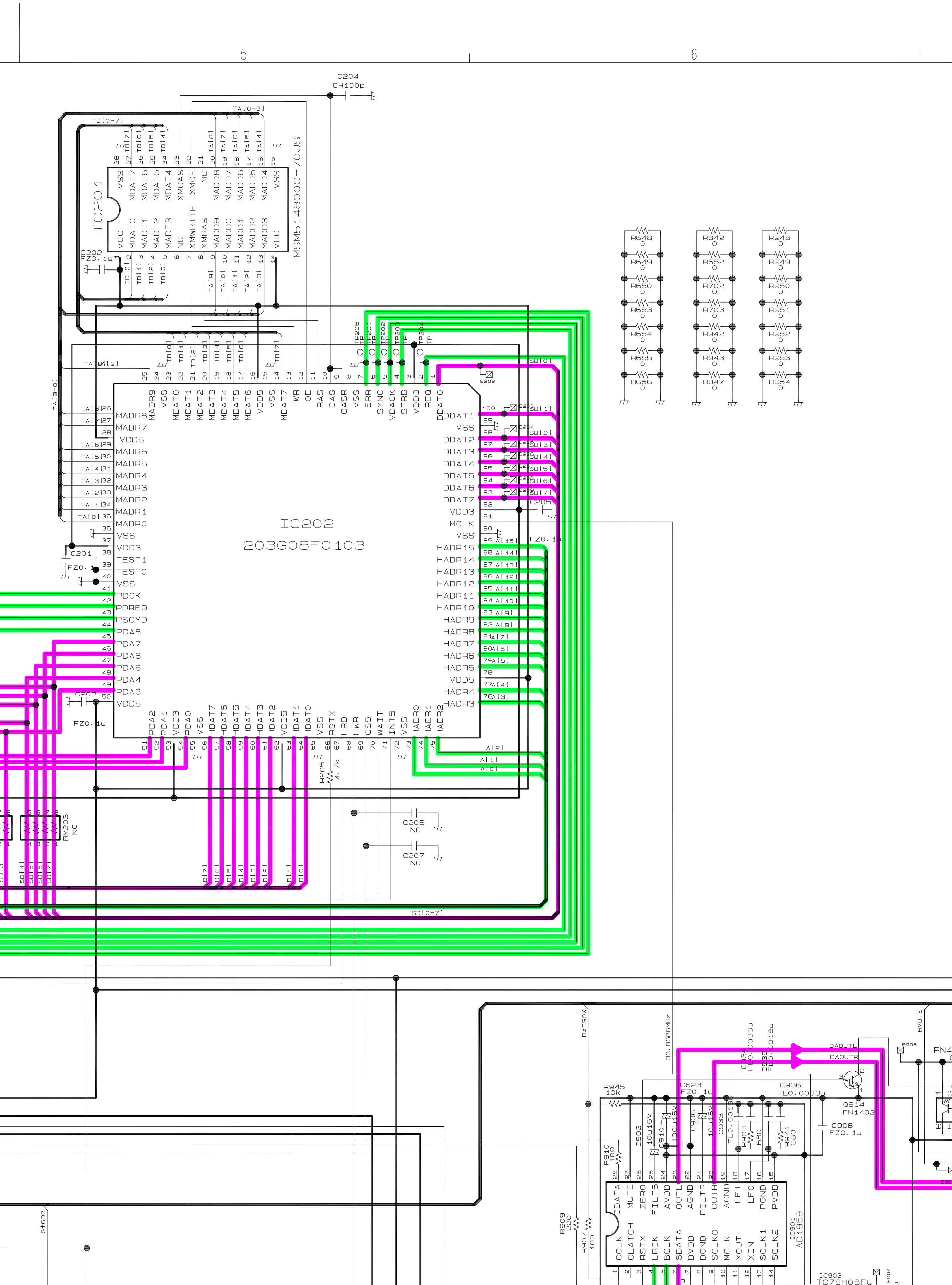
SYMBOL \ MODEL	SD1700, 1750 200X	SD2700, 1300	SD1500	SD210E	SD110E
IC202	NC	203G08F0103	203G08F0103	203G08F0103	NC
RM201, 202, 203	EXB28V100	NC	NC	NC	EXB28V100
J302	NC	NC	YKF45–3001	NC	NC
CN501	52806–1891	52806–2391	52806–2391	52806–2391	52806–1891
R504	4.7	NC	NC	NC	4.7
CN301	NC	NC	NC	52806–1191	52806–1191
R325, 327, 330	NC	NC	75F	NC	NC
R318	NC	NC	10k	NC	NC
R319	NC	NC	12k	NC	NC
R331	NC	NC	4.7k	NC	NC
Q304	NC	NC	NC	2SA1162Y	2SA1162Y
Q305, Q308	NC	NC	NC	RN1402	RN1402
C305	NC	NC	NC	10µ16V	10µ16V
R317	NC	NC	NC	2.2k	2.2k
R320	NC	NC	NC	0	0
R328	0	0	0	NC	NC
R339, 340	NC	NC	NC	100k	100k

Fig. 3-5-5

5-3-2. Main Circuit Diagram


1
2
A
B
C
R527 10k
R528 91
Q505
Q504
RN1402
HN1C03F
R526 10k
R529 91
E536
E590
R539 47k
R510 10
E534
E591
HN1B01F
R507 47k
C508 FZ1u
C510 FZ0.1u
R512 47k
Q501
LASER DRIVE SIGNAL
R519 NC
R525 5.6k
A+5V
A+3V
AGND
E201
C513 BK0.001u
R545 10k
R536 100k
E535
R505 3.3
PU-HEAD-I/F
CN501
52806-2391
C543 FZ0.1u
R557 4.7
VCC
RF
LD2
MON2
VOR2
GND
VREF
VCC
FO
EO
AO
DO
CO
BO
F+
T-
T+
F-
VCC
GND
LD
MON
VOR
E554
E555
E556
E557
E558
R547
NC
E503
E501
E507
E508
E509
E510
E511
E512
E513
E514
E515
E516
E505
E506
E519
E520
E521
C539 FZ2.2u
PICKUP ERROR SIGNAL
C503 FZ0.1u
E502
R502 4.7
E533
C501 FZ0.1u 4.7
R503
C526 BK0.001u
C528 BK0.001u
C530 CH220p
RFO
C519 FZ0.1u
C532 FZ2.2u
R535 4.7k
E566
TP502
R522 0
C517 SL330p
R508 1k
C533 FZ0.1u
IC502
TA1323F
P1FN
P1FP
LDP1
P1DI
P1CI
P1BI
P1AI
GNDA
LDP2
P2AI
P2BI
P2CI
P2DI
GNDS
P2FP
P2FN
P1TP
P1TN
LDO1
MDI1
EQF
EQB
Vr-A
RFDC
TCC1
GND2
NC
Vcc2
DPDB
FEB
TEB
RFS
VccR
RFOp
RFOn
RPP
RPB
RPO
RPZ
NC
VccS
DFTN
FEO
TEO
LVL
VccP
VCKF
VRCK
SCD
SCL
SCB
DPD2
DPD1
DPBD
DPAC
Vdd
Vrfil
VrD
MDI2
LDO2
P2TN
P2TP
GND
E565
E564
E563
E562
E561
E548
E560
E553
E552
E551
C534 FZ0.1u
E550
C529 FZ0.1u
C527 FZ0.1u
E589
E588
R546 3.3k
VCC+5V2
R542 10k
TP503 RFSB
E545
VDD+3V3
R504 NC
R506 2.2M
R551 2.2M
D502 1SS368
R501 NC
C502 FZ0.1u
D501 1SS368
T+
F+
F-
Q502 HN1B01F
R552 3.3
R553 10
R554 47k
C541 FZ0.1u
R556 47k
C542 FZ1u
E583
E582
E585
E584
C518 100u16
C516 FZ2.2u
C520 FZ2.2u
C522 FZ1u
C523 FZ1u
C524 BK0.001u
C525 BK0.001u
TRY-I/F 2300/6200
CN502
6207-3217
GND
LDMP
TOPN
LDMN
TCLS
NC
E522
E523
E524
E525
E526
E527
E559
R555 47k
E592
C506 FZ0.1u
C505 FZ2.2u
IC501
TC7S04F
TP501
FG
IC504
NC
ON
Vss
Vin
Vout
C535
C536 NC
JP501
C504 FZ2.2u
R520 100
R521 100
IC503
BA5813FM
VO1(+)
VO1(-)
VO2(+)
VO2(-)
VOL(+)
VOL(-)
POWVcc12
PREVcc
IN2
IN1
MUTE1
LDCONT
REV
FWD
VO4(+)
VO4(-)
VO3(+)
VO3(-)
GND
POWVcc34
MUTE2
IN3
IN4
RGND
REG-P
REG-B
RVcc
BIAS
R514 2kF
R515 2.2kF
DMO
FMO
C515 NC
C511 BK0.1u
R513 0
C512 BK0.1u
Q503 2SA1213Y
E544
E547
C507 FZ2.2u
C509 FZ0.1u
R517 100
R518 100
R509 820F
R511 1.5kF
C514 100u16V
R516 4.7
E546
E549
TRACKING SERVO SIGNAL
FOCUS SERVO SIGNAL
TRO
DISC-MOTER-I/F
CN503
52808-0891
FMN
FMP
GND
LMT
DMN
DMP
VCC
DMFG
E528
E529
E530
E531
E532
E517
E518
E504
TRAY CONTROL SIGNAL
R658 0
C604 FZ0.1u
Q603 NC
AO
VCC
IC611
TC7S08F
R626 10k
R630 1k
R627 10k
R633 2.2k
RM604


3
4
TC94A03F
IC401
M11B11664A-30T
IC402
FOCUS ERROR
TRACKING ERROR
FEED MOTOR
SERVO SIGNAL
DISC MOTOR
SERVO SIGNAL
VREFD
RFCT
TP504
TP408
RFRP
TP407
TP403
RFCD
RFSD
TP404
TP405
TP406
FE
TE
TP401
TP402
TP414
TP409
TP410
TP411
TP412
TP413
Q401
2SC3326B
R402
22k
X401
NC
D+3V
RM201
NC
RM202
NC
RM605
DPA[8-0]
A[8]
C+6DB

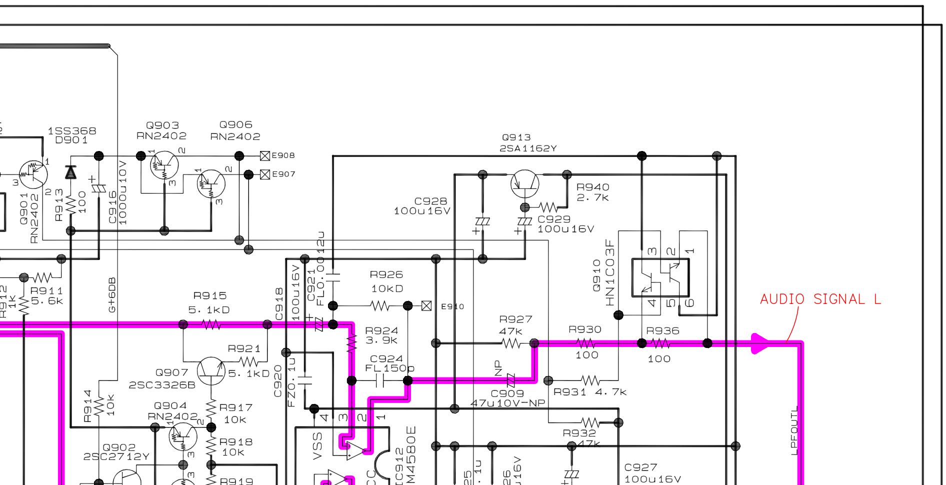

5
6
C204
CH100p
TA[0-9]
TD[0-7]
IC201
MSM514800C-70JS
VSS
MDAT7
MDAT6
MDAT5
MDAT4
XMCAS
XMOE
NC
MADD8
MADD7
MADD6
MADD5
MADD4
VSS
VCC
MDAT0
MDAT1
MDAT2
MDAT3
NC
XMWRITE
XMRAS
MADD9
MADD0
MADD1
MADD2
MADD3
VCC
C202
FZ0.1u
R648
R649
R650
R653
R654
R655
R656
R342
R652
R702
R703
R942
R943
R947
R948
R949
R950
R951
R952
R953
R954
TP205
TP201
TP202
TP203
TP204
E202
SD[0]
IC202
203G08F0103
MADR9
VSS
MDAT0
MDAT1
MDAT2
MDAT3
MDAT4
MDAT5
MDAT6
VDD5
VSS
MDAT7
WR
OE
RAS
CAS
CASR
VSS
ERR
SYNC
VDACK
STRB
VDD3
REQ
DDAT0
MADR8
MADR7
VDD5
MADR6
MADR5
MADR4
MADR3
MADR2
MADR1
MADR0
VSS
VDD3
TEST1
TEST0
VSS
PDCK
PDREQ
PSCYD
PDA8
PDA7
PDA6
PDA5
PDA4
PDA3
VDD5
DDAT1
VSS
DDAT2
DDAT3
DDAT4
DDAT5
DDAT6
DDAT7
VDD3
MCLK
VSS
HADR15
HADR14
HADR13
HADR12
HADR11
HADR10
HADR9
HADR8
HADR7
HADR6
HADR5
VDD5
HADR4
HADR3
PDA2
PDA1
VDD3
PDA0
VSS
HDAT7
HDAT6
HDAT5
HDAT4
HDAT3
HDAT2
VDD5
HDAT1
HDAT0
VSS
RSTX
HRD
HWR
CS5
WAIT
INT5
VSS
HADR0
HADR1
HADR2
C201
FZ0.1u
C203
FZ0.1u
C205
FZ0.1u
SD[1]
SD[2]
SD[3]
SD[4]
SD[5]
SD[6]
SD[7]
A[15]
A[14]
A[13]
A[12]
A[11]
A[10]
A[9]
A[8]
A[7]
A[6]
A[5]
A[4]
A[3]
A[2]
A[1]
A[0]
R205
4.7k
C206
NC
C207
NC
RM203
NC
SD[0-7]
D[7]
D[6]
D[5]
D[4]
D[3]
D[2]
D[1]
D[0]
DACS0X
33.8688MHz
HMUTE
DAOUTL
DAOUTR
E905
RN4601
Q912
Q914
RN1402
Q901
RN2402
R913
R912
1k
R911
5.6k
E906
C908
FZ0.1u
R945
10k
C623
FZ0.1u
C936
FL0.0033u
C934
FL0.0033u
C935
FL0.0018u
C902
10u16V
C910
100u16V
C906
10u16V
C933
FL0.0018u
R903
680
R941
680
R910
100
R909
220
R907
100
IC901
AD1959
CDATA
MUTE
ZERO
FILTB
AVDD
OUTL
AGND
DGND
OUTR
AGND
LF1
LFO
PGND
PVDD
CCLK
CLATCH
RSTX
LRCK
BCLK
SDATA
DVDD
DGND
SCLKO
MCLK
XOUT
XIN
SCLK1
SCLK2
IC903
TC7SH08FU
E904
G+6DB

SYMBOL

SYMBOL
IC202
RM201, 20
J302
CN501
R504
CN301
R325, 327
R318
R319
R331
Q304
Q305, Q30
C305
R317
R320
R328
R339, 340

YMBOL DIFFERENCE LIST

MODEL YMBOL	SD1700, 1750 200X	SD2700, 1300	SD1500	SD210E	SD110E
:202	NC	203G08F0103	203G08F0103	203G08F0103	NC
M201, 202, 203	EXB28V100	NC	NC	NC	EXB28V100
502	NC	NC	YKF45-3001	NC	NC
N501	52806-1891	52806-2391	52806-2391	52806-2391	52806-1891
504	4.7	NC	NC	NC	4.7
N301	NC	NC	NC	52806-1191	52806-1191
325, 327, 330	NC	NC	75F	NC	NC
318	NC	NC	10k	NC	NC
319	NC	NC	12k	NC	NC
331	NC	NC	4.7k	NC	NC
304	NC	NC	NC	2SA1162Y	2SA1162Y
305, Q308	NC	NC	NC	RN1402	RN1402
305	NC	NC	NC	10µ16V	10µ16V
317	NC	NC	NC	2.2k	2.2k
320	NC	NC	NC	0	0
328	0	0	0	NC	NC
339, 340	NC	NC	NC	100k	100k


1SS368
D901
Q901
RN2402
R913
100
C916
1000u10V
Q903
RN2402
Q906
RN2402
E908
E907
R911
5.6K
R912
1K
G+6DB
R915
5.1KD
C918
100u16V
C921
FL0.0012u
R926
10KD
E910
Q913
2SA1162Y
C928
100u16V
C929
100u16V
R940
2.7K
Q910
HN1C03F
R927
47K
R924
3.9K
C924
FL150p
R930
100
R936
100
AUDIO SIGNAL L
R921
5.1KD
Q907
2SC3326B
C920
FZ0.1u
C909
47u10V-NP
NP
R931 4.7K
R914
10K
Q904
RN2402
R917
10K
R918
10K
R919
Q902
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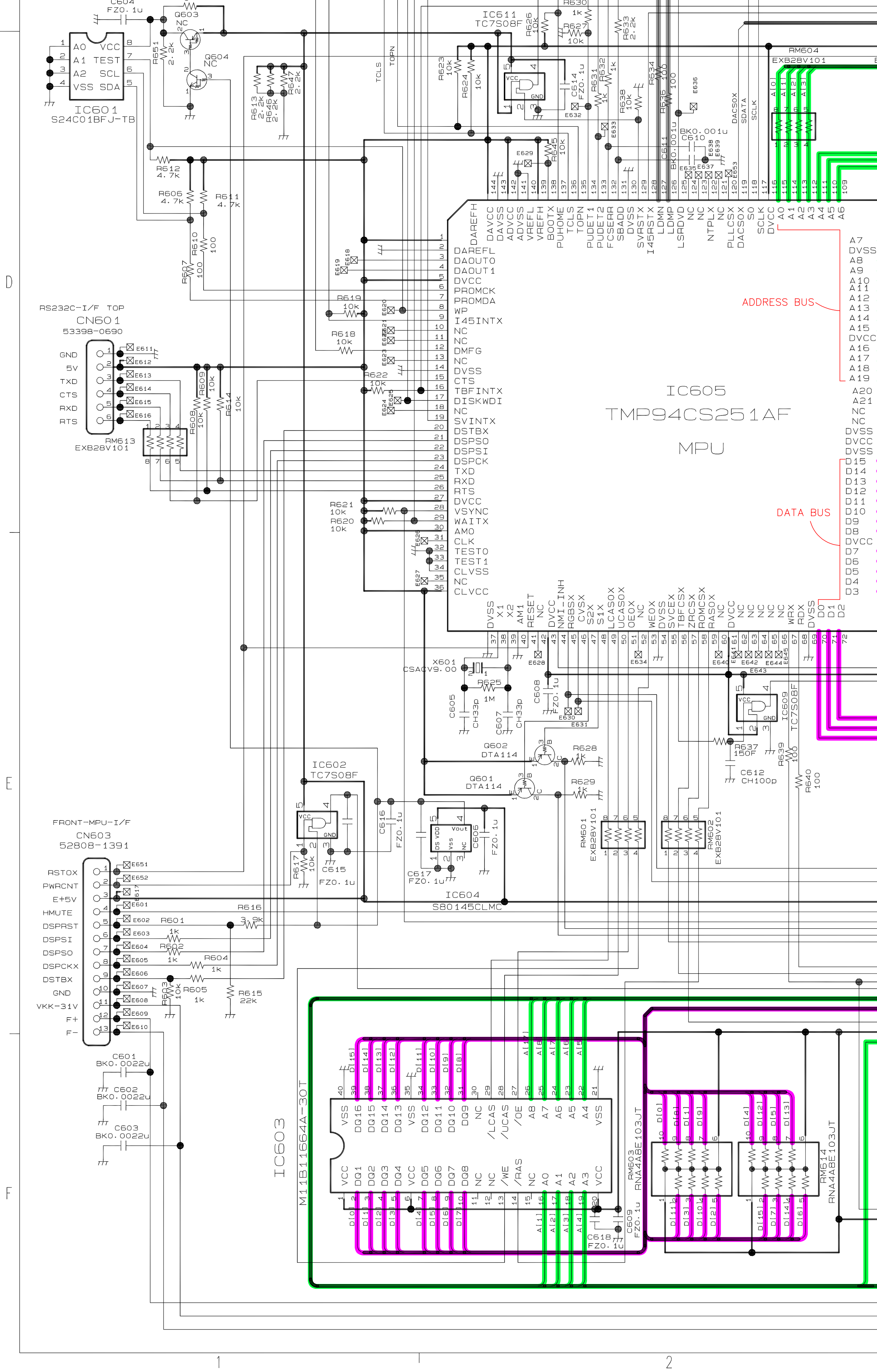
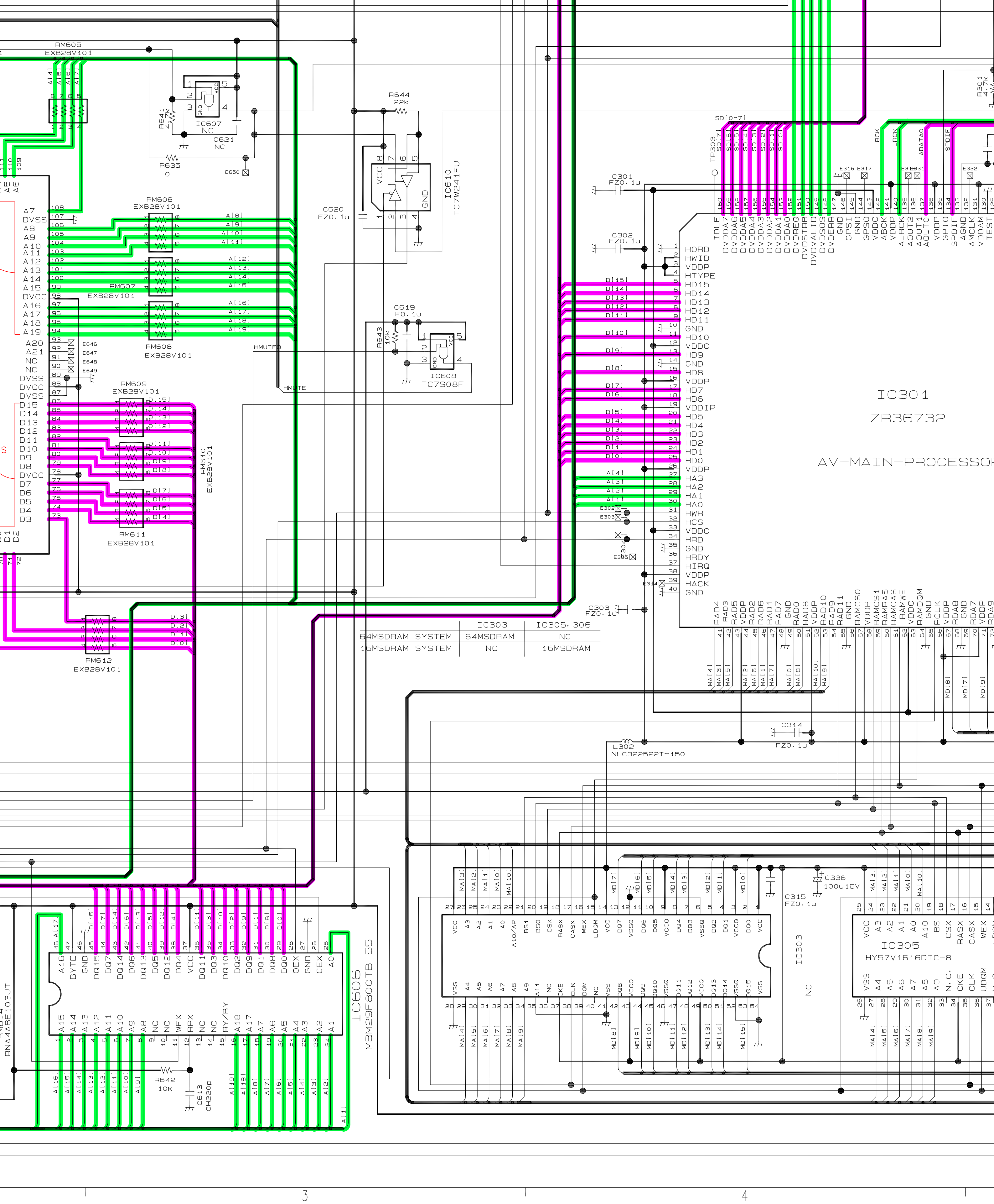
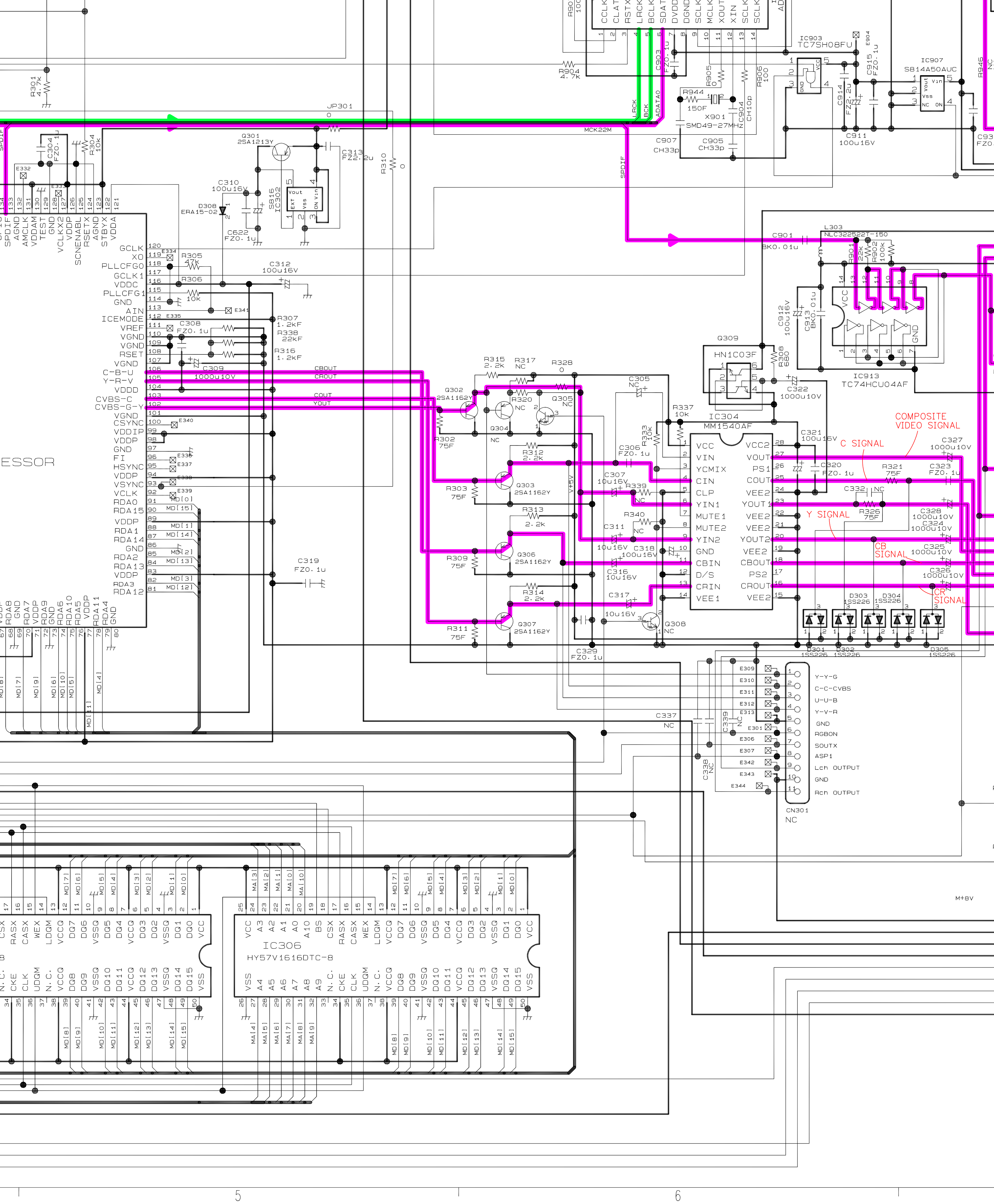
VSS
IC912
M4580E
R932
47K
C927
100u16V
LREOUTL


IC601
S24C01BFJ-TB
A0 VCC
A1 TEST
A2 SCL
VSS SDA
Q603 NC
Q604 NC
IC611 TC7S08F
RM604 EXB28V101
RS232C-I/F TOP
CN601
53398-0690
GND
5V
TXD
CTS
RXD
RTS
RM613 EXB28V101
IC605
TMP94CS251AF
MPU
ADDRESS BUS
DATA BUS
X601 CSACV9.00
Q602 DTA114
Q601 DTA114
IC602 TC7S08F
IC604 S80145CLMC
IC609 TC7S08F
RM601 EXB28V101
RM602 EXB28V101
FRONT-MPU-I/F
CN603
52808-1391
RSTOX
PWRCNT
E+5V
HMUTE
DSPRST
DSPSI
DSPSO
DSPCKX
DSTBX
GND
VKK-31V
F+
F-
C601 BK0.0022u
C602 BK0.0022u
C603 BK0.0022u
IC603
M11B11664A-30T
RM603 RNA4A8E103JT
RM614 RNA4A8E103JT
C618 FZ0.1u
C609 FZ0.1u
D
E
F
1
2


RM605
EXB28V101
IC607
NC
C621
NC
R641
4.7k
R635
0
E650
R644
22k
C620
FZ0.1u
IC610
TC7W241FU
VCC
GND
RM606
EXB28V101
RM607
EXB28V101
RM608
EXB28V101
A[8]
A[9]
A[10]
A[11]
A[12]
A[13]
A[14]
A[15]
A[16]
A[17]
A[18]
A[19]
A7
DVSS
A8
A9
A10
A11
A12
A13
A14
A15
DVCC
A16
A17
A18
A19
A20
A21
NC
NC
DVSS
DVCC
DVSS
D15
D14
D13
D12
D11
D10
D9
D8
DVCC
D7
D6
D5
D4
D3
E646
E647
E648
E649
HMUTE
C619
F0.1u
R643
10k
IC608
TC7S08F
RM609
EXB28V101
RM610
EXB28V101
RM611
EXB28V101
RM612
EXB28V101
D[15]
D[14]
D[13]
D[12]
D[11]
D[10]
D[9]
D[8]
D[7]
D[6]
D[5]
D[4]
D[3]
D[2]
D[1]
D[0]
SD[0-7]
TP303
C301
FZ0.1u
C302
FZ0.1u
E316
E317
E318
E319
E332
BCK
LRCK
ADATA0
SPDIF
R391
4.7k
HORD
HWID
VDDP
HTYPE
HD15
HD14
HD13
HD12
HD11
GND
HD10
VDDC
HD9
GND
HD8
VDDP
HD7
HD6
VDDIP
HD5
HD4
HD3
HD2
HD1
HD0
VDDP
HA3
HA2
HA1
HA0
HWR
HCS
VDDC
HRD
GND
HRDY
HIRQ
VDDP
HACK
GND
A[4]
A[3]
A[2]
A[1]
E302
E303
E304
E305
E314
IDLE
DVDDA7
DVDDA6
DVDDA5
DVDDA4
DVDDA3
DVDDA2
DVDDA1
DVDDA0
DVDREQ
DVDSTRB
DVDVALID
DVDSOS
DVDERR
GND
GPSI
GND
GPSO
VDDC
ABCK
VDDP
ALRCK
AOUT2
AOUT1
AOUT0
VDDP
GPIO
SPDIF
AGND
AMCLK
VDDAM
TEST
IC301
ZR36732
AV-MAIN-PROCESSOR
C303
FZ0.1u
RAD4
RAD3
RAD5
VDDP
RAD2
RAD6
RAD1
RAD7
GND
RAD0
RAD8
VDDP
RAD10
RAD9
RAD11
GND
RAMCS0
VDDP
RAMCS1
RAMRAS
RAMCAS
RAMWE
VDDC
RAMDQM
GND
PCLK
VDDP
RDA8
GND
RDA7
VDDP
RDA9
MA[4]
MA[3]
MA[5]
MA[2]
MA[6]
MA[1]
MA[7]
MA[0]
MA[8]
MA[10]
MA[9]
MD[8]
MD[7]
MD[9]
C314
FZ0.1u
L302
NLC322522T-150
C336
100u16V
C315
FZ0.1u
IC303
NC
IC305
HY57V1616DTC-8
MD[7]
MD[6]
MD[5]
MD[4]
MD[3]
MD[2]
MD[1]
MD[0]
MD[8]
MD[9]
MD[10]
MD[11]
MD[12]
MD[13]
MD[14]
MD[15]
VCC
A3
A2
A1
A0
A10/AP
BS1
BS0
CSX
RASX
CASX
WEX
LDQM
DQ7
VSSQ
DQ6
DQ5
VCCQ
DQ4
DQ3
DQ2
DQ1
DQ0
VSS
A4
A5
A6
A7
A8
A9
A11
NC
CKE
CLK
DQM
DQ8
DQ9
DQ10
DQ11
DQ12
DQ13
DQ14
DQ15
BS
UDQM
N.C.
IC606
MBM29F800TB-55
A16
BYTE
GND
DQ15
DQ7
DQ14
DQ6
DQ13
DQ5
DQ12
DQ4
VCC
DQ11
DQ3
DQ10
DQ2
DQ9
DQ1
DQ8
DQ0
OEX
GND
CEX
A0
A15
A14
A13
A12
A11
A10
A9
A8
NC
NC
WEX
RPX
NC
NC
RY/BY
A18
A17
A7
A6
A5
A4
A3
A2
A1
R642
10k
C613
CH220p
RNA4A8E103JT
3
4

	IC303	IC305, 306
64MSDRAM SYSTEM	64MSDRAM	NC
16MSDRAM SYSTEM	NC	16MSDRAM



ESSOR
IC303 TC7SH08FU
IC907 S814A50AUC
R904 4.7k
R944 150F
X901 SMD49-27MHZ
C907 CH33p
C905 CH33p
C904 CH10p
R906 100
C903 FZ0.1u
C914 FZ2.2u
C915 FZ0.1u
C911 100u16V
E904
LRCK
BCK
ADATA0
MCK22M
SPDIF
JP301 0
R301 4.7k
R304 10k
C304 FZ0.1u
E332
E333
Q301 2SA1213Y
C313 FZ2.2u
R310 0
C310 100u16V
D308 ERA15-02
IC302 S816
Vout
EXT
VSS
ON
Vin
C622 FZ0.1u
GCLK
XO
PLLCFG0
GCLK1
VDDC
PLLCFG1
GND
AIN
ICEMODE
VREF
VGND
RSET
C-B-U
Y-R-V
VDDD
CVBS-C
CVBS-G-Y
CSYNC
VDDIP
VDDP
FI
HSYNC
VSYNC
VCLK
RDA0
RDA15
RDA1
RDA14
RDA2
RDA13
RDA3
RDA12
R305 47k
R306 10k
C312 100u16V
R307 1.2kF
R338 22kF
R316 1.2kF
C308 FZ0.1u
C309 1000u10V
E334
E335
E341
E340
E336
E337
E338
E339
CBOUT
CROUT
COUT
YOUT
C319 FZ0.1u
MD[0]
MD[1]
MD[2]
MD[3]
MD[4]
MD[5]
MD[6]
MD[7]
MD[8]
MD[9]
MD[10]
MD[11]
MD[12]
MD[13]
MD[14]
MD[15]
R315 2.2k
R317 NC
R328 0
Q302 2SA1162Y
R320 NC
Q305 NC
Q304 NC
R302 75F
R312 2.2k
Q303 2SA1162Y
R303 75F
R313 2.2k
Q306 2SA1162Y
R309 75F
R314 2.2k
Q307 2SA1162Y
R311 75F
C329 FZ0.1u
C305 NC
C306 FZ0.1u
R333 10k
C307 10u16V
R339 NC
R340 NC
C311 10u16V
C318 100u16V
C316 10u16V
C317 10u16V
Q308 NC
V+5V
R337 10k
IC304 MM1540AF
VCC
VIN
YCMIX
CIN
CLP
YIN1
MUTE1
MUTE2
YIN2
GND
CBIN
D/S
CRIN
VEE1
VCC2
VOUT
PS1
COUT
VEE2
YOUT1
YOUT2
CBOUT
PS2
CROUT
Q309 HN1C03F
R308 680
C322 1000u10V
C321 100u16V
C320 FZ0.1u
C332 NC
R321 75F
R326 75F
C323 FZ0.1u
C327 1000u10V
C328 1000u10V
C324 1000u10V
C325 1000u10V
C326 1000u10V
COMPOSITE VIDEO SIGNAL
C SIGNAL
Y SIGNAL
CB SIGNAL
CR SIGNAL
D301 1SS226
D302 1SS226
D303 1SS226
D304 1SS226
D305 1SS226
C901 BK0.01u
L303 NLC322522T-150
R901 22k
R902 100k
C912 100u16V
C913 BK0.01u
IC913 TC74HCU04AF
C337 NC
C338 NC
C339 NC
E309
E310
E311
E312
E313
E301
E306
E307
E342
E343
E344
CN301 NC
Y-Y-G
C-C-CVBS
U-U-B
Y-V-R
GND
RGBON
SOUTX
ASP1
Lch OUTPUT
GND
Rch OUTPUT
M+8V
IC306 HY57V1616DTC-8
VCC
A3
A2
A1
A0
A10
BS
CSX
RASX
CASX
WEX
LDQM
VCCQ
DQ0
DQ1
DQ2
DQ3
DQ4
DQ5
DQ6
DQ7
VSSQ
VSS
A4
A5
A6
A7
A8
A9
N.C.
CKE
CLK
UDQM
DQ8
DQ9
DQ10
DQ11
DQ12
DQ13
DQ14
DQ15
MA[0]
MA[1]
MA[2]
MA[3]
MA[4]
MA[5]
MA[6]
MA[7]
MA[8]
MA[9]
MA[10]
5
6

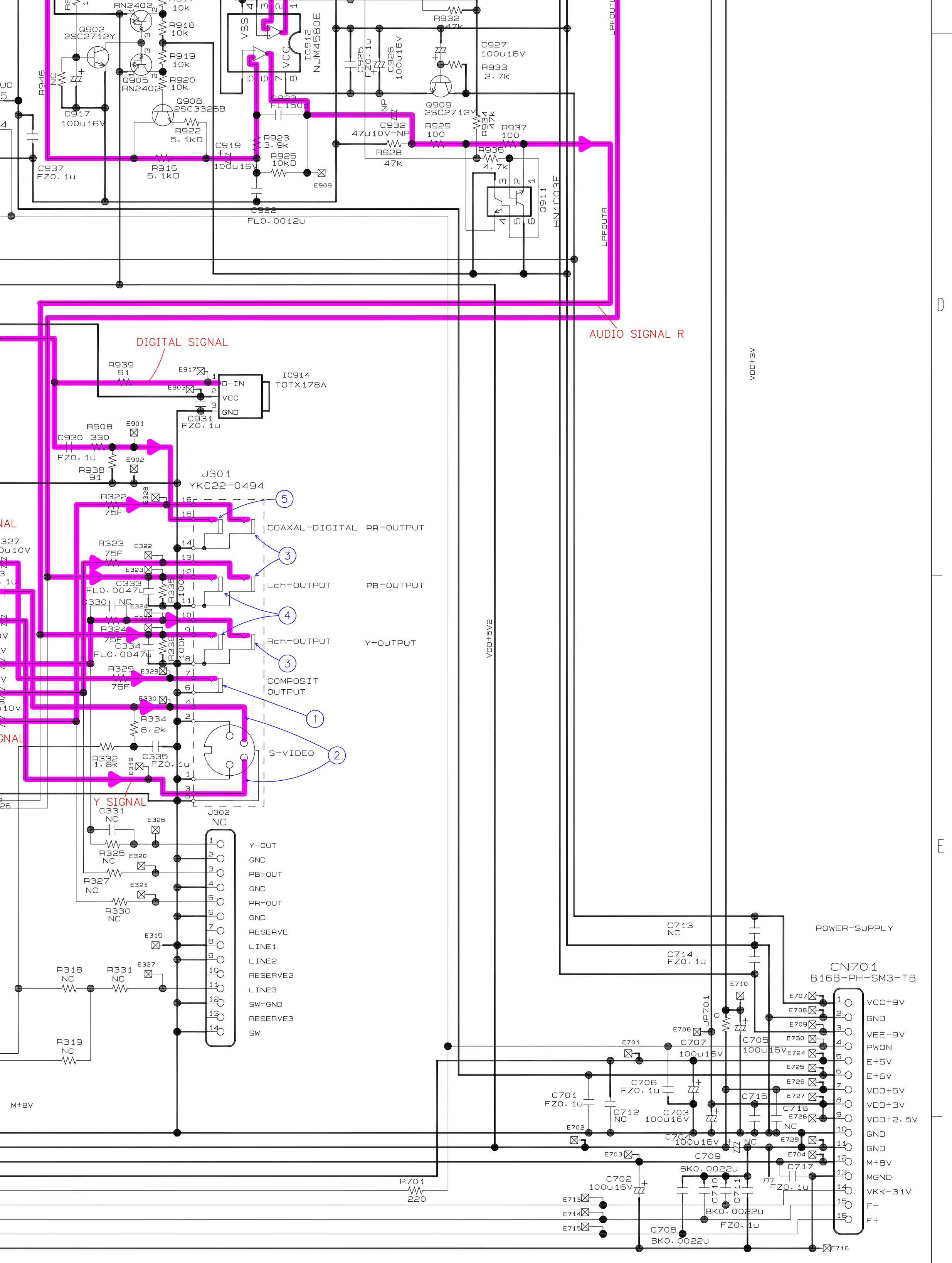
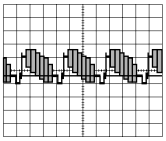

IC912 NJM4580E
VSS
VCC
Q902 2SC2712Y
RN2402
Q905 RN2402
Q908 2SC3326B
R918 10k
R919 10k
R920 10k
R922 5.1kD
R916 5.1kD
C917 100u16V
C937 FZ0.1u
C919 100u16V
R923 3.9k
R925 10kD
C923 FL150p
C922 FL0.0012u
E909
C925 FZ0.1u
C926 100u16V
C927 100u16V
R932 47k
R933 2.7k
Q909 2SC2712Y
C932 47u10V-NP
R929 100
R928 47k
R934 47k
R937 100
R935 4.7k
Q911 HN1C03F
LPFOUTR
LPFOUTL
AUDIO SIGNAL R
DIGITAL SIGNAL
R939 91
E917
E903
IC914 TOTX178A
D-IN
VCC
GND
C931 FZ0.1u
R908 330
C930 FZ0.1u
E901
E902
R938 91
J301 YKC22-0494
R322 75F
R323 75F
R324 75F
R329 75F
E328
E322
E323
E324
E325
E329
E330
C333 FL0.0047u
C334 FL0.0047u
C330 NC
R335 100k
R336 100k
COAXAL-DIGITAL PR-OUTPUT
Lch-OUTPUT PB-OUTPUT
Rch-OUTPUT Y-OUTPUT
COMPOSIT OUTPUT
S-VIDEO
R334 8.2k
R332 1.8k
C335 FZ0.1u
E319
Y SIGNAL
C331 NC
E326
R325 NC
E320
R327 NC
E321
R330 NC
E315
R318 NC
R331 NC
E327
R319 NC
J302 NC
Y-OUT
GND
PB-OUT
GND
PR-OUT
GND
RESERVE
LINE1
LINE2
RESERVE2
LINE3
SW-GND
RESERVE3
SW
M+8V
VDD+5V2
VDD+3V
R701 220
C713 NC
C714 FZ0.1u
POWER-SUPPLY
CN701 B16B-PH-SM3-TB
E710
JP701
E706
E701
C707 100u16V
C705 100u16V
C706 FZ0.1u
C701 FZ0.1u
C712 NC
C703 100u16V
C715
C716 NC
C704 100u16V
C709
E702
E703
C702 100u16V
E713
E714
E715
C708 BK0.0022u
BK0.0022u
C710
C711
FZ0.1u
C717 FZ0.1u
E716
E707
E708
E709
E730
E724
E725
E726
E727
E728
E729
E704
VCC+9V
GND
VEE-9V
PWON
E+5V
E+6V
VDD+5V
VDD+3V
VDD+2.5V
GND
GND
M+8V
MGND
VKK-31V
F-
F+
1
2
3
4
5
D
E
F
7
8

Fig. 3-5-5

Main Circuit Diagram

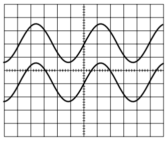
① J301 Composite video output E-7



CVBS output
75Ω terminated
100% color bar

V: 500 mV/div
H: 20 µs/div

④ J301 L ch output E-7
/ R ch output E-7
(1 kHz, FS)

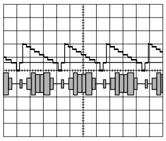


L ch output

R ch output
V: 2 V/div
H: 200 µs/div

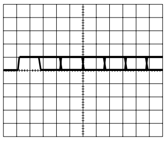
② J301
(a) S-video output Y E-7
(b) S-video output C E-7

S-Y/C
75Ω terminated
100% color bar



(a) Y
(b) C
V: 500 mV/div
H: 20 µs/div

⑤ J301 COAXIAL -DIGITAL OUTPUT D-7

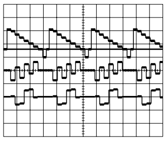


75Ω terminated

V: 500 mV/div
H: 0.1 µs/div

③ J301 Y/PB/PR output D-7

Component output
75Ω terminated
100% color bar
(Play)

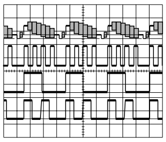


Y
PB
PR
V: 500 mV/div
H: 20 µs/div

Output-RGB Circuit Diagram

⑥ JV01 SCART output C-10
(Video out select : RGB)

NTSC 100% color bar (Play)
75Ω terminated



(a) Pin ⑲ : CV } V: 1 V/div H: 20 µs/div
(b) Pin ⑦ : B
(c) Pin ⑪ : G
(d) Pin ⑮ : R } V: 500 mV/div H: 20 µs/div

Fig. 3-5-6

5-4. Output-RGB Circuit Diagram

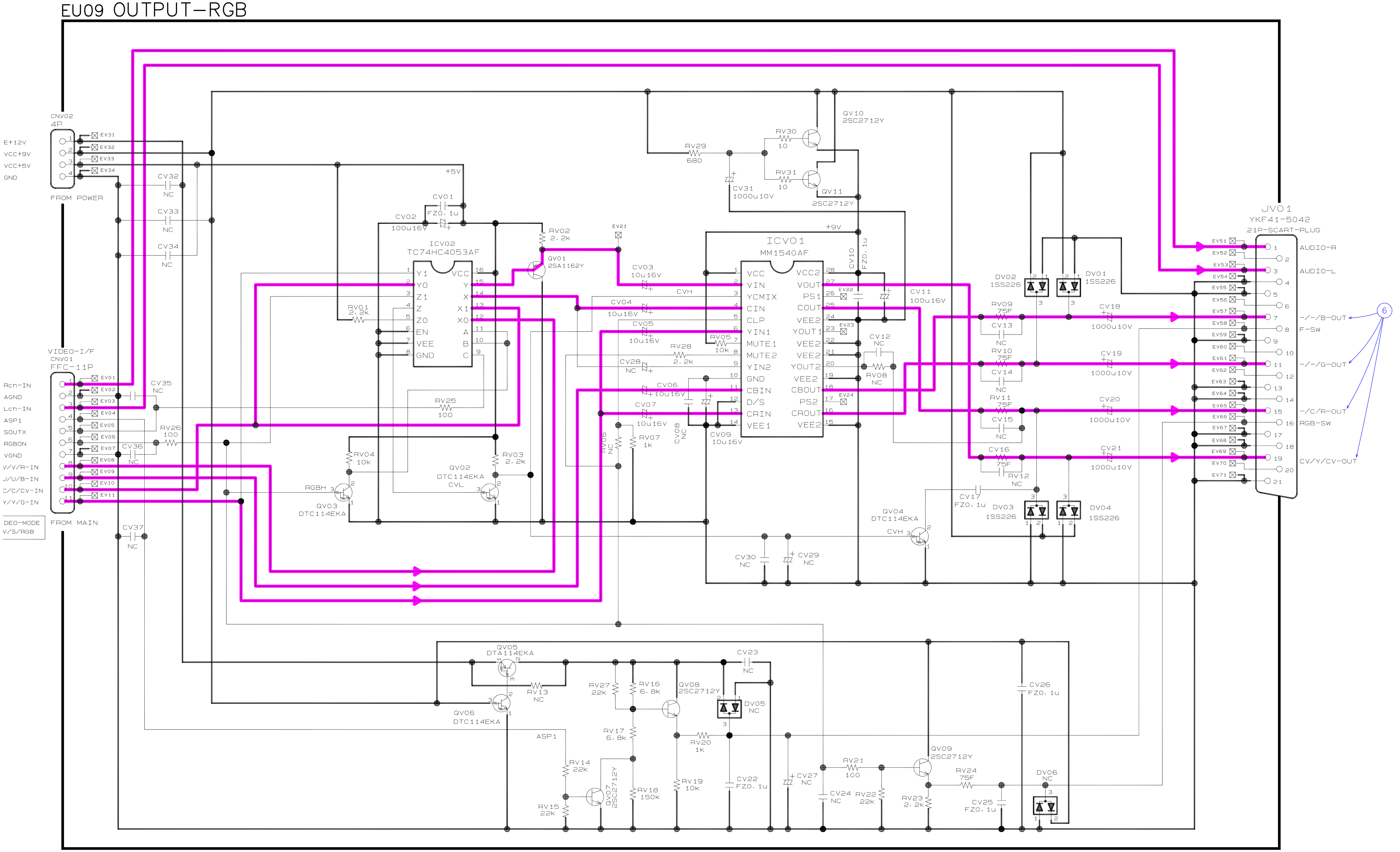
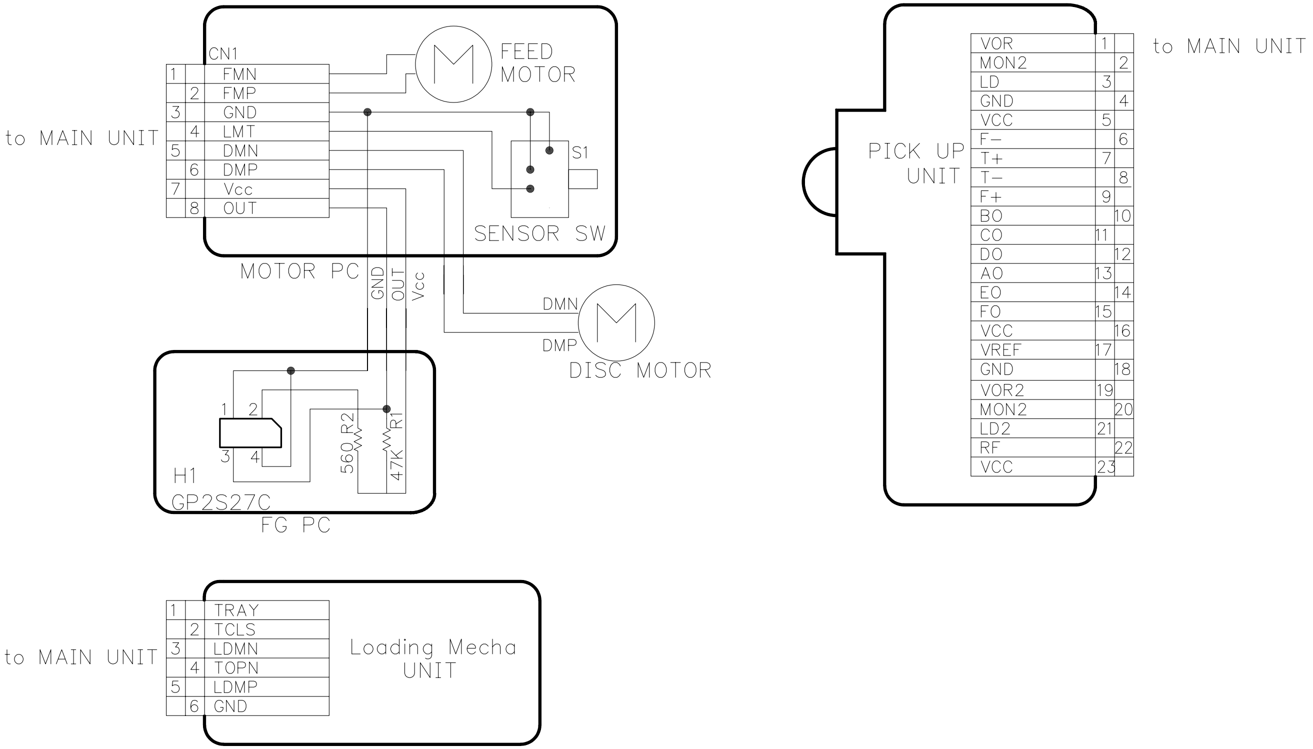

EU09 OUTPUT-RGB
CNV02
4P
E+12V
VCC+9V
VCC+5V
GND
FROM POWER
EV31
EV32
EV33
EV34
CV32
NC
CV33
NC
CV34
NC
+5V
CV01
FZ0. 1u
CV02
100u16V
ICV02
TC74HC4053AF
Y1
Y0
Z1
Z
Z0
EN
VEE
GND
VCC
Y
X
X1
X0
A
B
C
RV01
2. 2k
RV02
2. 2k
QV01
2SA1162Y
EV21
CV03
10u16V
CVH
CV04
10u16V
CV05
10u16V
CV28
NC
RV28
2. 2k
RV05
10k
CV06
10u16V
CV07
10u16V
RV06
NC
RV07
1k
CV08
NC
CV09
10u16V
ICV01
MM1540AF
VCC
VIN
YCMIX
CIN
CLP
YIN1
MUTE1
MUTE2
YIN2
GND
CBIN
D/S
CRIN
VEE1
VCC2
VOUT
PS1
COUT
VEE2
YOUT1
VEE2
VEE2
YOUT2
VEE2
CBOUT
PS2
CROUT
VEE2
+9V
CV10
FZ0. 1u
EV22
EV23
EV24
CV11
100u16V
CV12
NC
RV08
NC
QV10
2SC2712Y
RV30
10
RV29
680
RV31
10
CV31
1000u10V
QV11
2SC2712Y
DV02
1SS226
DV01
1SS226
RV09
75F
CV13
NC
RV10
75F
CV14
NC
RV11
75F
CV15
NC
CV16
75F
RV12
NC
CV17
FZ0. 1u
CV18
1000u10V
CV19
1000u10V
CV20
1000u10V
CV21
1000u10V
DV03
1SS226
DV04
1SS226
QV04
DTC114EKA
CVH
CV30
NC
CV29
NC
JV01
YKF41-5042
21P-SCART-PLUG
EV51
EV52
EV53
EV54
EV55
EV56
EV57
EV58
EV59
EV60
EV61
EV62
EV63
EV64
EV65
EV66
EV67
EV68
EV69
EV70
EV71
AUDIO-R
AUDIO-L
-/-/B-OUT
F-SW
-/-/G-OUT
-/C/R-OUT
RGB-SW
CV/Y/CV-OUT
6
VIDEO-I/F
CNV01
FFC-11P
Rch-IN
AGND
Lch-IN
ASP1
SOUTX
RGBON
VGND
V/V/R-IN
J/U/B-IN
C/C/CV-IN
Y/Y/G-IN
DEO-MODE
V/S/RGB
FROM MAIN
EV01
EV02
EV03
EV04
EV05
EV06
EV07
EV08
EV09
EV10
EV11
CV35
NC
RV26
100
CV36
NC
CV37
NC
RV25
100
RV04
10k
RV03
2. 2k
RGBH
QV03
DTC114EKA
QV02
DTC114EKA
CVL
QV05
DTA114EKA
RV13
NC
QV06
DTC114EKA
ASP1
RV27
22k
RV16
6. 8k
RV17
6. 8k
QV08
2SC2712Y
CV23
NC
DV05
NC
RV20
1k
RV14
22k
RV15
22k
QV07
2SC2712Y
RV18
150k
RV19
10k
CV22
FZ0. 1u
CV27
NC
CV24
NC
RV21
100
RV22
22k
QV09
2SC2712Y
RV23
2. 2k
RV24
75F
CV25
FZ0. 1u
CV26
FZ0. 1u
DV06
NC

Fig. 3-5-7

5-5. Motor System Circuit Diagram

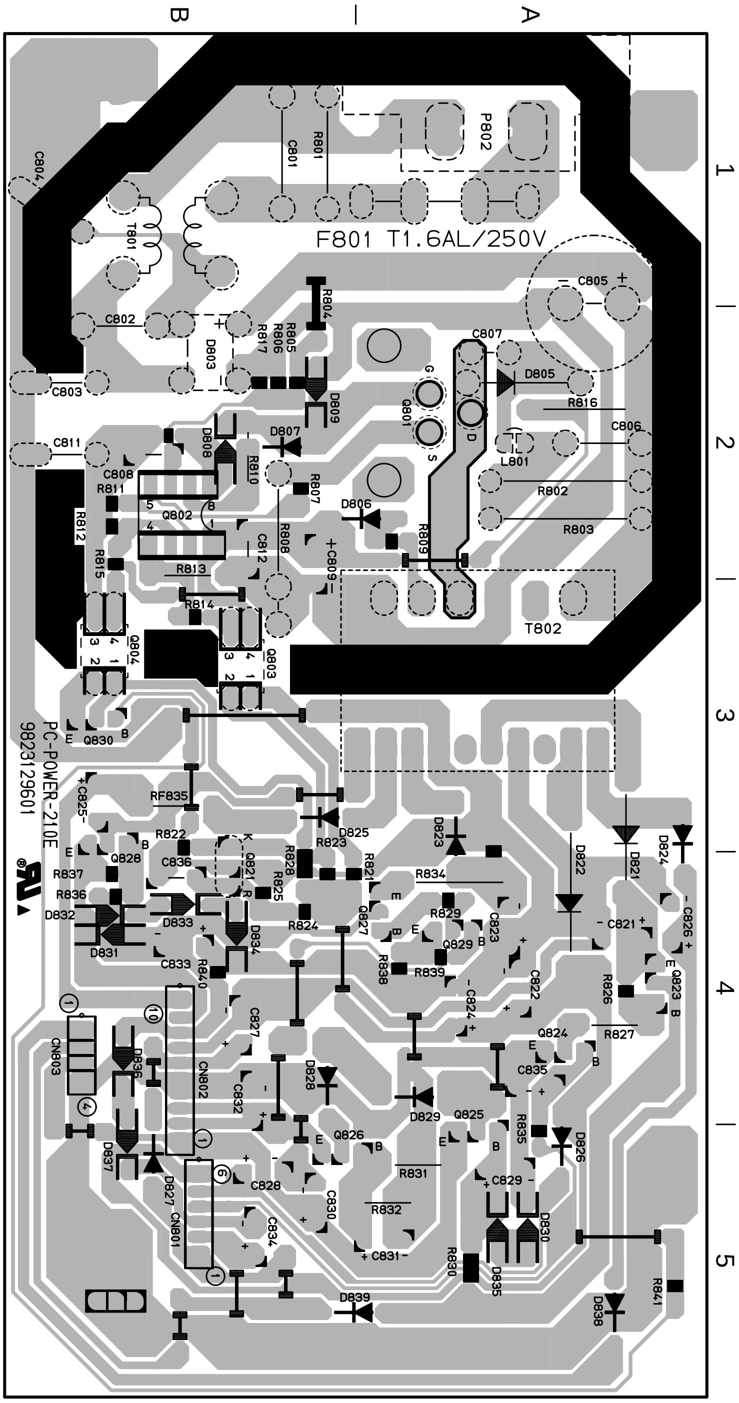


to MAIN UNIT
CN1
1 FMN
2 FMP
3 GND
4 LMT
5 DMN
6 DMP
7 Vcc
8 OUT
FEED MOTOR
S1
SENSOR SW
MOTOR PC
GND
OUT
Vcc
DMN
DMP
DISC MOTOR
1
2
3
4
560 R2
47K R1
H1
GP2S27C
FG PC
to MAIN UNIT
1 TRAY
2 TCLS
3 LDMN
4 TOPN
5 LDMP
6 GND
Loading Mecha UNIT
PICK UP UNIT
to MAIN UNIT
VOR 1
MON2 2
LD 3
GND 4
VCC 5
F− 6
T+ 7
T− 8
F+ 9
BO 10
CO 11
DO 12
AO 13
EO 14
FO 15
VCC 16
VREF 17
GND 18
VOR2 19
MON2 20
LD2 21
RF 22
VCC 23

Fig. 3-5-8

6. PC BOARDS

6-1. Power Supply PC Board


B
A
1
2
3
4
5
P802
F801 T1.6AL/250V
T801
T802
L801
Q801
G
D
S
Q802
Q803
Q804
Q821
Q823
Q824
Q825
Q826
Q827
Q828
Q829
Q830
CN801
CN802
CN803
PC-POWER-210E
9823129601
C801
C802
C803
C804
C805
C806
C807
C808
C809
C811
C812
C821
C822
C823
C824
C825
C826
C827
C828
C829
C830
C831
C832
C833
C834
C835
C836
D803
D805
D806
D807
D808
D809
D821
D822
D823
D824
D825
D826
D827
D828
D829
D830
D831
D832
D833
D834
D835
D836
D837
D838
D839
R801
R802
R803
R804
R805
R806
R807
R808
R809
R810
R811
R812
R813
R814
R815
R816
R817
R821
R822
R823
R824
R825
R826
R827
R828
R829
R830
R831
R832
R834
R835
R836
R837
R838
R839
R840
R841
RF835

Part No.	Loca-tion	Part No.	Loca-tion
C801	B1	L801	A2
C802	B2	P802	A1
C803	B2	Q801	A2
C804	B1	Q802	B2
C805	A1	Q803	B3
C806	A2	Q804	B3
C807	A2	Q821	B4
C808	B2	Q823	A4
C809	B3	Q824	A4
C811	B2	Q825	A5
C812	B2	Q826	B5
C821	A4	Q827	A4
C822	A4	Q828	B3
C823	A4	Q829	A4
C824	A4	Q830	B3
C825	B3	R801	B1
C826	A4	R802	A2
C827	B4	R803	A2
C828	B5	R804	B2
C829	A5	R805	B2
C830	B5	R806	B2
C831	A5	R807	B2
C832	B4	R808	B2
C833	B4	R809	A2
C834	B5	R810	B2
C835	A4	R811	B2
C836	B4	R812	B2
CN801	B5	R813	B2
CN802	B4	R814	B3
CN803	B4	R815	B2
D803	B2	R816	A2
D805	A2	R817	B2
D806	B2	R821	B4
D807	B2	R822	B3
D808	B2	R823	B4
D809	B2	R824	B4
D821	A4	R825	B4
D822	A4	R826	A4
D823	A3	R827	A4
D824	A4	R828	B3
D825	B3	R829	A4
D826	A5	R830	A5
D827	B4	R831	A5
D828	B4	R832	B5
D829	A4	R833	A3
D830	A5	R834	A4
D831	B4	R835	A4
D832	B4	R836	B4
D833	B4	R837	B4
D834	B4	R838	A4
D835	A5	R839	A4
D836	B4	R840	B4
D837	B5	R841	A5
D838	A5	RF835	B3
D839	B5	T801	B1
F801	A1	T802	A3

Fig. 3-6-1 EU02 Power Supply PC Board (Bottom side)

6-2. Power Switch PC Board

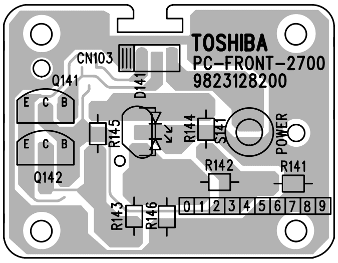

TOSHIBA
PC-FRONT-2700
9823128200
CN103
Q141
D141
R145
R144
S141
POWER
R142
R141
Q142
R143
R146
0 1 2 3 4 5 6 7 8 9
E C B

Fig. 3-6-2 EU04
Power Switch PC Board (Top side)

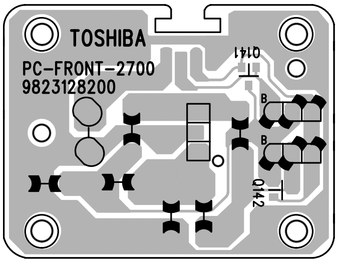

TOSHIBA
PC-FRONT-2700
9823128200
Q141
Q142
B

Fig. 3-6-3 EU04
Power Switch PC Board (Bottom side)

6-3. Output-RGB PC Board

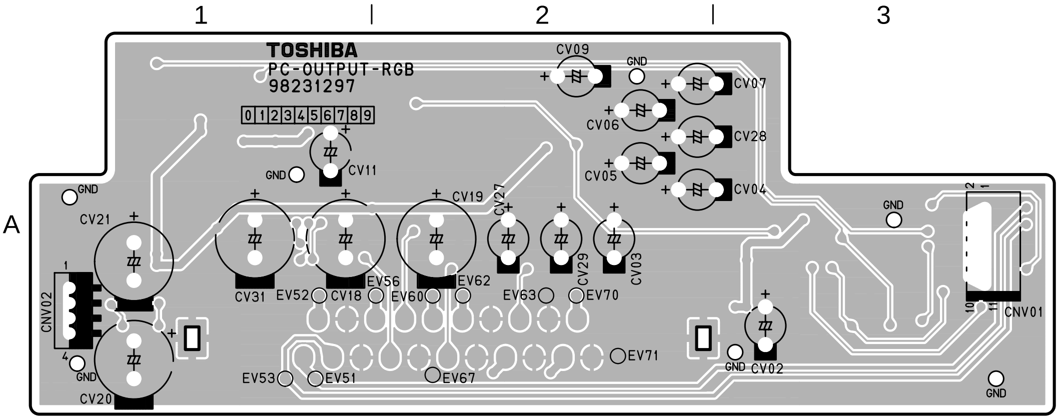

1
2
3
A
TOSHIBA
PC-OUTPUT-RGB
98231297
0 1 2 3 4 5 6 7 8 9
CV09
GND
CV07
CV06
CV28
CV05
CV04
CV11
GND
CV19
CV27
CV21
CNV02
CV31
EV52
CV18
EV56
EV60
EV62
EV63
EV70
CV29
CV03
EV71
EV53
EV51
EV67
CV20
GND
CV02
CNV01
GND

Fig. 3-6-4 EU09 Output-RGB PC Board (Top side)

Part No.	Loca-tion
CNV01	A3
CNV02	A1
CV02	A3
CV03	A2
CV04	A2
CV05	A2
CV06	A2
CV07	A2
CV09	A2
CV11	A1
CV18	A1
CV19	A2
CV20	A1
CV21	A1
CV27	A2
CV28	A2
CV29	A2
CV31	A1
EV51	A1
EV52	A1
EV53	A1
EV56	A2
EV60	A2
EV62	A2
EV63	A2
EV67	A2
EV70	A2
EV71	A2

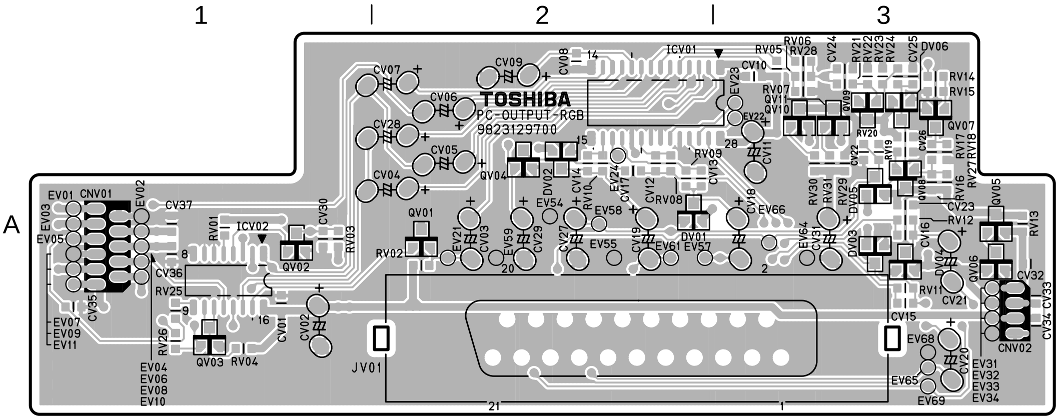

1
2
3
A
TOSHIBA
PC-OUTPUT-RGB
9823129700
ICV01
ICV02
CNV01
CNV02
JV01
EV01
EV02
EV03
EV05
CV37
CV36
RV25
CV35
EV07
EV09
EV11
RV26
EV04
EV06
EV08
EV10
QV03
RV04
QV02
RV01
CV30
RV03
CV01
CV02
QV01
RV02
CV07
CV28
CV04
CV06
CV09
CV05
CV08
QV04
DV02
CV14
CV17
CV12
RV08
DV01
EV57
EV61
CV19
CV27
CV29
CV03
EV21
EV59
EV54
EV58
EV55
RV10
EV24
RV09
CV13
CV10
EV23
EV22
CV11
CV18
EV66
RV05
RV06
RV28
RV07
QV11
QV10
CV24
RV21
RV22
RV23
RV24
CV25
DV06
RV14
RV15
QV07
QV09
RV20
CV22
RV19
CV26
RV17
RV18
RV16
RV27
QV08
RV30
RV31
RV29
DV05
EV64
CV31
DV03
CV16
DV04
CV23
RV12
QV05
RV13
QV06
RV11
CV21
CV32
CV33
CV34
CV15
EV68
CV20
EV31
EV32
EV33
EV34
EV65
EV69
14
15
28
8
9
16
20
2
21
1

Fig. 3-6-5 EU09 Output-RGB PC Board (Bottom side)

Part No.	Loca-tion
CV01	A1
CV08	A2
CV10	A3
CV12	A2
CV13	A2
CV14	A2
CV15	A3
CV16	A3
CV17	A2
CV22	A3
CV23	A3
CV24	A3
CV25	A3
CV26	A3
CV30	A1
CV32	A3
CV33	A3
CV34	A3
CV35	A1
CV36	A1
CV37	A1
DV01	A2
DV02	A2
DV03	A3
DV04	A3
DV05	A3
DV06	A3
EV01	A1
EV02	A1
EV03	A1
EV04	A1
EV05	A1
EV06	A1
EV07	A1
EV08	A1
EV09	A1
EV10	A1
EV11	A1
EV21	A2
EV22	A3
EV23	A3
EV24	A2
EV31	A3
EV32	A3
EV33	A3
EV34	A3
EV54	A2
EV55	A2
EV57	A2
EV58	A2
EV59	A2
EV61	A2
EV64	A3
EV65	A3
EV66	A3
EV68	A3
EV69	A3
ICV01	A2
ICV02	A1
JV01	A2
QV01	A2
QV02	A1
QV03	A1
QV04	A2
QV05	A3
QV06	A3
QV07	A3
QV08	A3
QV09	A3
QV10	A3
QV11	A3
RV01	A1
RV02	A2
RV03	A1
RV04	A1
RV05	A3
RV06	A3
RV07	A3
RV08	A2
RV09	A2
RV10	A2
RV11	A3
RV12	A3
RV13	A3
RV14	A3
RV15	A3
RV16	A3
RV17	A3
RV18	A3
RV19	A3
RV20	A3
RV21	A3
RV22	A3
RV23	A3
RV24	A3
RV25	A1
RV26	A1
RV27	A3
RV28	A3
RV29	A3
RV30	A3
RV31	A3

6-4. Main PC Board

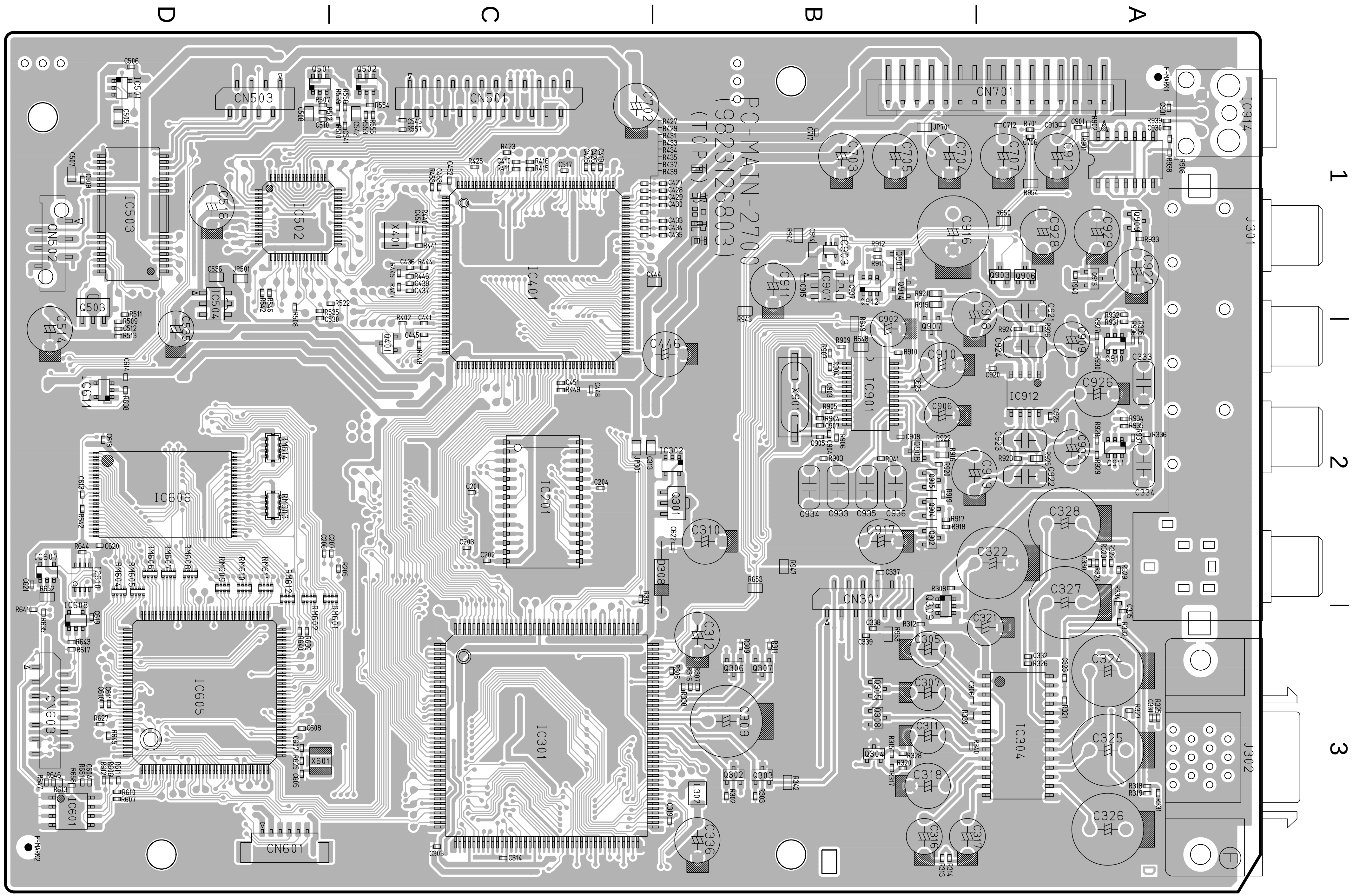

D
C
B
A
1
2
3
PC-MAIN-2700
(98231726803)
(TOP)
CN503
CN501
CN701
IC914
J301
J302
IC503
CN502
IC502
IC401
IC504
Q503
IC606
IC605
IC201
IC301
IC901
IC912
IC304
CN301
CN601
CN603
IC601
X601
X901
X401
F-MARK1
F-MARK2

Fig. 3-6-6 EU01 Main PC Board (Top pattern and Top parts location diagram)

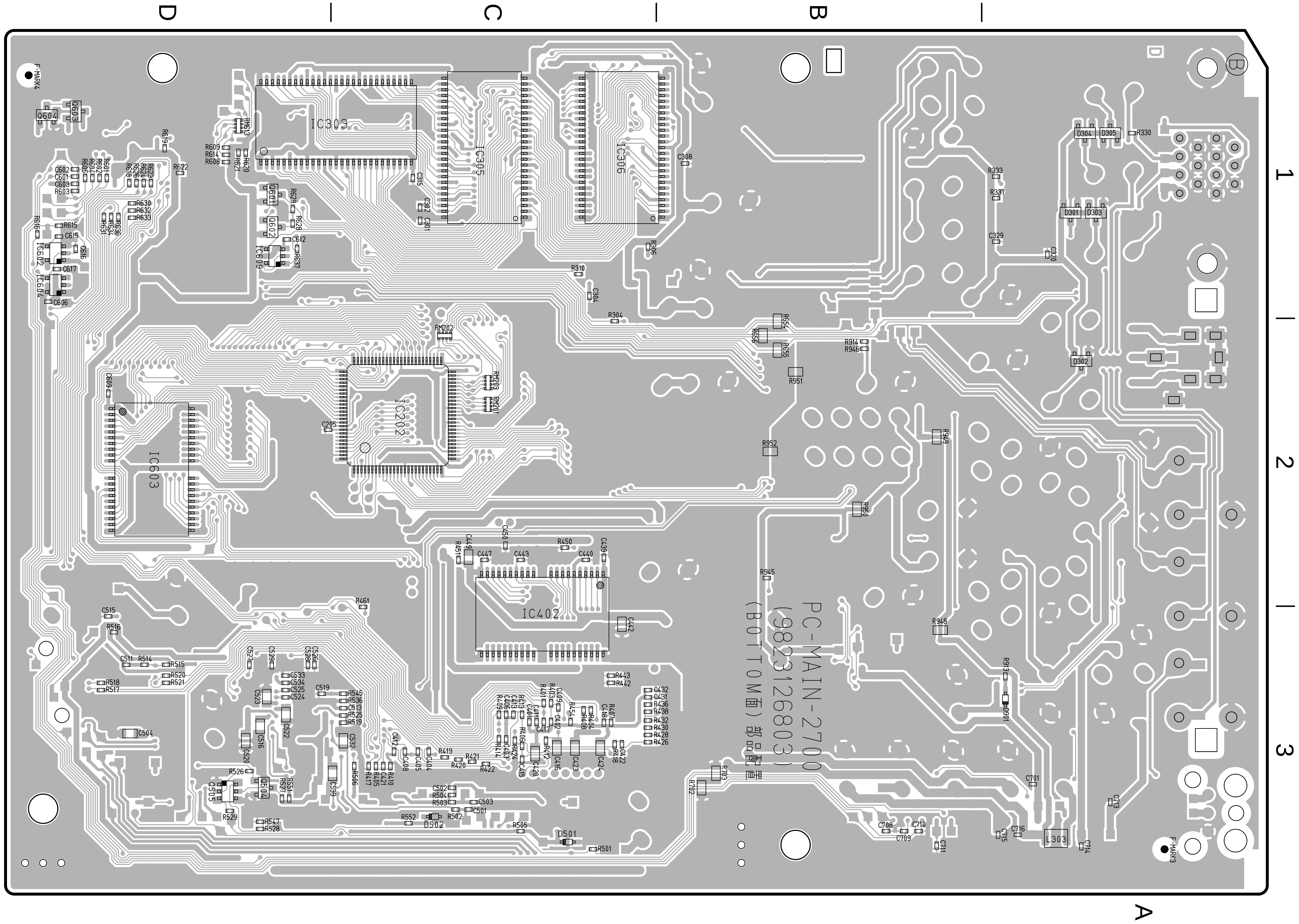

D
C
B
A
1
2
3
IC303
IC305
IC306
IC202
IC603
IC402
Q604
Q603
Q601
Q602
IC609
IC602
IC607
D301
D302
D303
D304
D305
D501
D502
L303
PC-MAIN-2700
(9823126803)
(BOTTOM面)部品配置

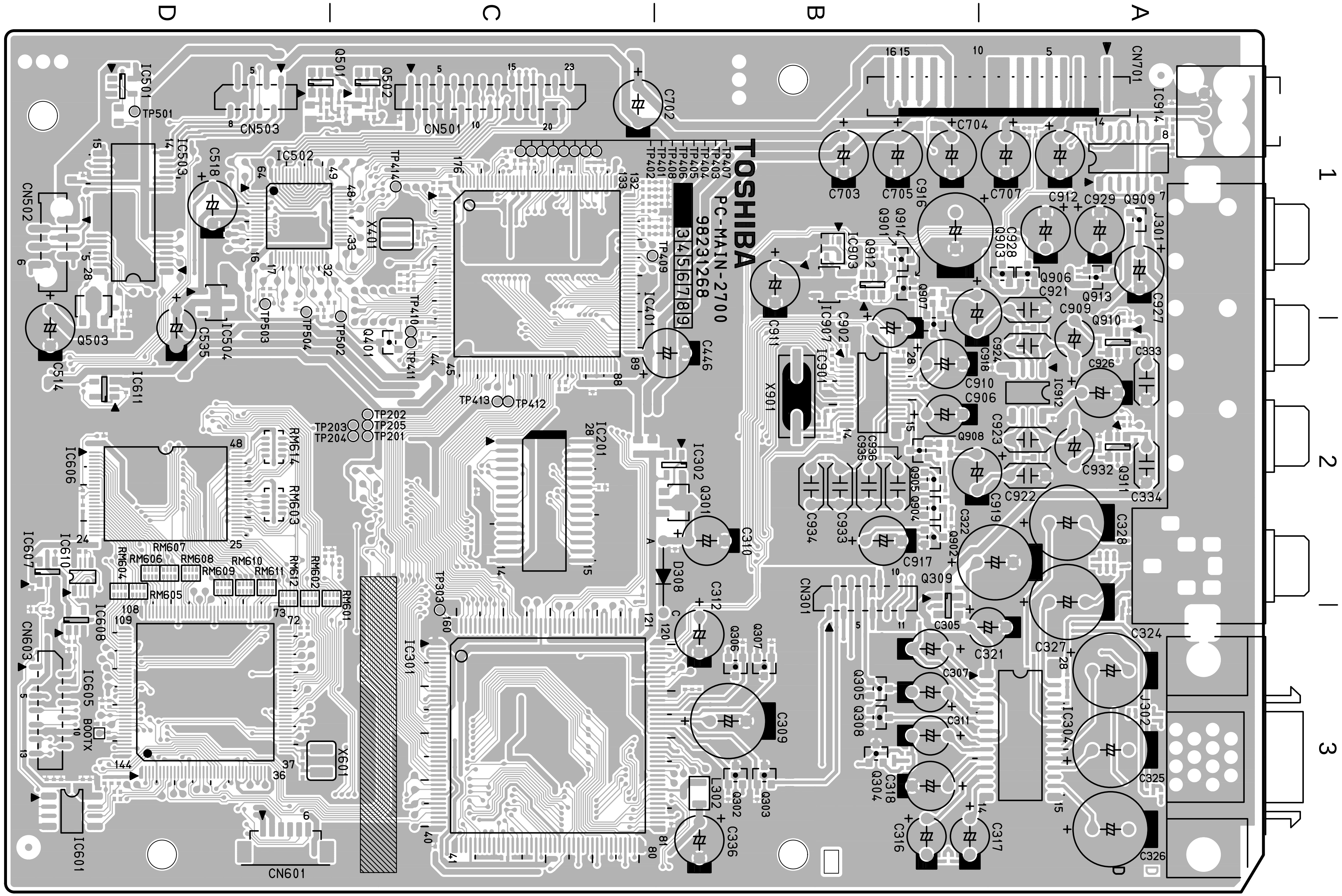
Fig. 3-6-7 EU01 Main PC Board (Bottom pattern and bottom parts location diagram)

Main PC Board (Top Side)

Part No.	Loca-tion
C201	C2
C202	C2
C203	C2
C204	C2
C206	D2
C207	C2
C303	C3
C305	B3
C306	B3
C307	B3
C309	B3
C310	B2
C311	B3
C312	B3
C313	C2
C314	C3
C316	B3
C317	B3
C318	B3
C319	B3
C321	A3
C322	A2
C323	A3
C324	A3
C325	A3
C326	A3
C327	A2
C328	A2
C330	A2
C331	A3
C332	A3
C333	A2
C334	A2
C335	A3
C336	B3
C337	B2
C338	B3
C339	B3
C410	C1
C419	C1
C425	C1
C426	C1
C427	B1
C428	B1
C429	B1
C430	B1
C433	B1
C434	B1
C435	B1
C436	C1
C437	C1
C438	C1
C441	C2
C444	B1
C445	C2
C446	B2
C448	C2
C451	C2
C452	C1
C453	C1
C454	C1
C505	D1
C506	D1
C507	D1
C508	D1
C509	D1
C510	D1
C512	D2
C514	D2
C517	C1
C518	D1
C530	D1
C535	D2
C536	D1
C541	C1
C542	C1
C543	C1
C604	D3
C605	D3
C607	D3
C608	D3
C610	D3
C611	D3
C613	D2
C614	D2
C618	D2
C619	D3
C620	D2
C621	D2
C622	B2
C623	B2
C702	C1
C703	B1
C704	B1
C705	B1
C706	A1
C707	A1
C712	A1
C717	B1
C901	A1
C902	B2
C903	B2
C904	B2
C905	B2
C906	B2
C907	B2
C908	B2
C909	A2
C910	B2
C911	B1
C912	A1
C913	A1
C914	B1
C915	B1
C916	B1
C917	B2
C918	B1
C919	B2
C920	A2
C921	A1
C922	A2
C923	A2
C924	A2
C925	A2
C926	A2
C927	A1
C928	A1
C929	A1
C930	A1
C931	A1
C932	A2
C933	B2
C934	B2
C935	B2
C936	B2
C937	B1
CN301	B2
CN501	C1
CN502	D1
CN503	D1
CN601	D3
CN603	D3
CN701	A1
D308	B2
IC201	C2
IC301	C3
IC302	B2
IC304	A3
IC401	C1
IC501	D1
IC502	D1
IC503	D1
IC504	D1
IC601	D3
IC605	D3
IC606	D2
IC607	D2
IC608	D3
IC610	D2
IC611	D2
IC901	B2
IC903	B1
IC907	B1
IC912	A2
IC913	A1
IC914	A1
J301	A1
J302	A3
JP301	C2
JP501	D1
JP701	B1
L302	B3
Q301	B2
Q302	B3
Q303	B3
Q304	B3
Q305	B3
Q306	B3
Q307	B3
Q308	B3
Q309	B3
Q401	C2
Q501	D1
Q502	C1
Q503	D1
Q901	B1
Q902	B2
Q903	A1
Q904	B2
Q905	B2
Q906	A1
Q907	B2
Q908	B2
Q909	A1
Q910	A2
Q911	A2
Q912	B1
Q913	A1
Q914	B1
R205	C2
R301	C2
R302	B3
R303	B3
R305	B3
R307	B3
R308	B2
R309	B3
R311	B3
R312	B3
R313	B3
R314	B3
R315	B3
R316	B3
R317	B3
R318	A3
R319	A3
R320	B3
R321	A3
R322	A2
R323	A2
R324	A2
R325	A3
R326	A3
R327	A3
R328	B3
R329	A2
R331	A3
R332	A3
R334	A2
R335	A2
R336	A2
R338	B3
R339	B3
R340	B3
R342	B3
R402	C2
R411	C1
R415	C1
R416	C1
R423	C1
R425	C1
R427	C1
R429	C1
R431	C1
R433	C1
R434	C1
R435	C1
R437	C1
R439	C1
R440	C1
R441	C1
R444	C1
R445	C1
R446	C1
R447	C1
R448	C2
R449	C2
R453	C1
R507	D1
R508	D1
R509	D2
R510	C1
R511	D1
R512	D1
R513	D2
R522	C1
R535	D1
R539	C1
R542	D1
R546	D1
R553	C1
R554	C1
R555	C1
R556	C1
R557	C1
R606	D3
R607	D3
R610	D3
R611	D3
R612	D3
R613	D3
R617	D3
R625	D3
R627	D3
R635	D3
R638	D2
R639	D3
R640	D3
R641	D3
R642	D2
R643	D3
R644	D2
R645	D3
R646	D3
R647	D3
R648	B2
R649	B2
R650	A1
R651	D3
R652	D2
R653	B2
R658	D3
R701	A1
R901	A1
R902	A1
R903	B2
R904	B2
R905	B2
R906	B2
R907	B2
R908	A1
R909	B2
R910	B2
R911	B1
R912	B1
R915	B1
R916	B2
R917	B2
R918	B2
R919	B2
R920	B2
R921	B1
R922	B2
R923	A2
R924	A2
R925	A2
R926	A2
R927	A2
R928	A2
R929	A2
R930	A2
R931	A2
R932	A1
R933	A1
R934	A2
R935	A2
R936	A2
R937	A2
R938	A1
R939	A1
R940	A1
R941	B2
R942	B1
R943	B1
R944	B2
R947	B2
R953	B3
R954	A1
RM601	C2
RM602	D2
RM603	D2
RM604	D2
RM605	D2
RM606	D2
RM607	D2
RM608	D2
RM609	D2
RM610	D2
RM611	D2
RM612	D2
RM614	D2
X401	C1
X601	D3
X901	B2

Main PC Board (Bottom Side)

Part No.	Loca-tion	Part No.	Loca-tion	Part No.	Loca-tion
C205	D2	C708	B3	R501	C3
C301	C1	C709	B3	R502	C3
C302	C1	C710	B3	R503	C3
C304	C1	C711	B3	R504	C3
C308	B1	C713	A3	R505	C3
C315	C1	C714	A3	R506	C3
C320	A1	C715	A3	R514	D3
C329	A1	C716	A3	R515	D3
C401	C3	D301	A1	R516	D3
C402	C3	D302	A2	R517	D3
C403	C3	D303	A1	R518	D3
C404	C3	D304	A1	R519	C3
C405	C3	D305	A1	R520	D3
C406	C3	D501	C3	R521	D3
C408	C3	D502	C3	R525	C3
C409	C3	D901	A3	R526	D3
C411	C3	IC202	C2	R527	D3
C412	C3	IC303	C1	R528	D3
C413	C3	IC305	C1	R529	D3
C415	C3	IC306	C1	R536	C3
C416	C3	IC402	C3	R545	C3
C417	C3	IC602	D1	R547	D3
C418	C3	IC603	D2	R551	D3
C420	C3	IC604	D1	R552	C3
C421	C3	IC609	D1	R601	D1
C422	C3	L303	A3	R602	D1
C423	C3	Q504	D3	R603	D1
C424	C3	Q505	D3	R604	D1
C431	C3	Q601	D1	R605	D1
C432	C3	Q602	D1	R608	D1
C439	C2	Q603	D1	R609	D1
C440	C2	Q604	D1	R614	D1
C442	C3	R304	C2	R615	D1
C443	C2	R306	C1	R616	D1
C447	C2	R310	C1	R618	D1
C449	C2	R330	A1	R619	D1
C450	C2	R333	A1	R620	D1
C501	C3	R337	A1	R621	D1
C502	C3	R401	C3	R622	D1
C503	C3	R403	C3	R623	D1
C504	D3	R404	C3	R624	D1
C511	D3	R405	C3	R626	D1
C513	C3	R406	C3	R628	D1
C515	D3	R407	C3	R629	D1
C516	D3	R408	C3	R630	D1
C519	D3	R409	C3	R631	D1
C520	D3	R410	C3	R632	D1
C522	D3	R412	C3	R633	D1
C523	D3	R413	C3	R634	D1
C524	D3	R414	C3	R636	D1
C525	D3	R417	C3	R637	D1
C526	D3	R418	C3	R654	B2
C527	D3	R419	C3	R655	B2
C528	D3	R420	C3	R656	B2
C529	D3	R421	C3	R702	B3
C532	C3	R422	C3	R703	B3
C533	D3	R424	C3	R913	A3
C534	D3	R426	C3	R914	B2
C539	C3	R428	C3	R945	B2
C601	D1	R430	C3	R946	B2
C602	D1	R432	C3	R948	B3
C603	D1	R436	C3	R949	B2
C606	D1	R438	C3	R950	B2
C609	D2	R442	C3	R951	B2
C612	D1	R443	C3	R952	B2
C615	D1	R450	C2	RM201	C2
C616	D1	R451	C2	RM202	C2
C617	D1	R454	C3	RM203	C2
C701	A3	R461	C3	RM613	D1


D
C
B
A
1
2
3
TOSHIBA
PC-MAIN-2700
98231268
3 4 5 6 7 8 9
CN701
CN501
CN503
CN502
CN601
CN603
CN301
IC501
IC502
IC503
IC504
IC401
IC201
IC301
IC302
IC304
IC601
IC605
IC606
IC607
IC608
IC610
IC611
IC901
IC903
IC907
IC912
IC914
J301
J302
X401
X601
X901
D308
L302
BOOTX
C702
C703
C704
C705
C707
C446
C309
C310
C312
C336
C518
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C535
Q501
Q502
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Q401
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TP303
TP401
TP402
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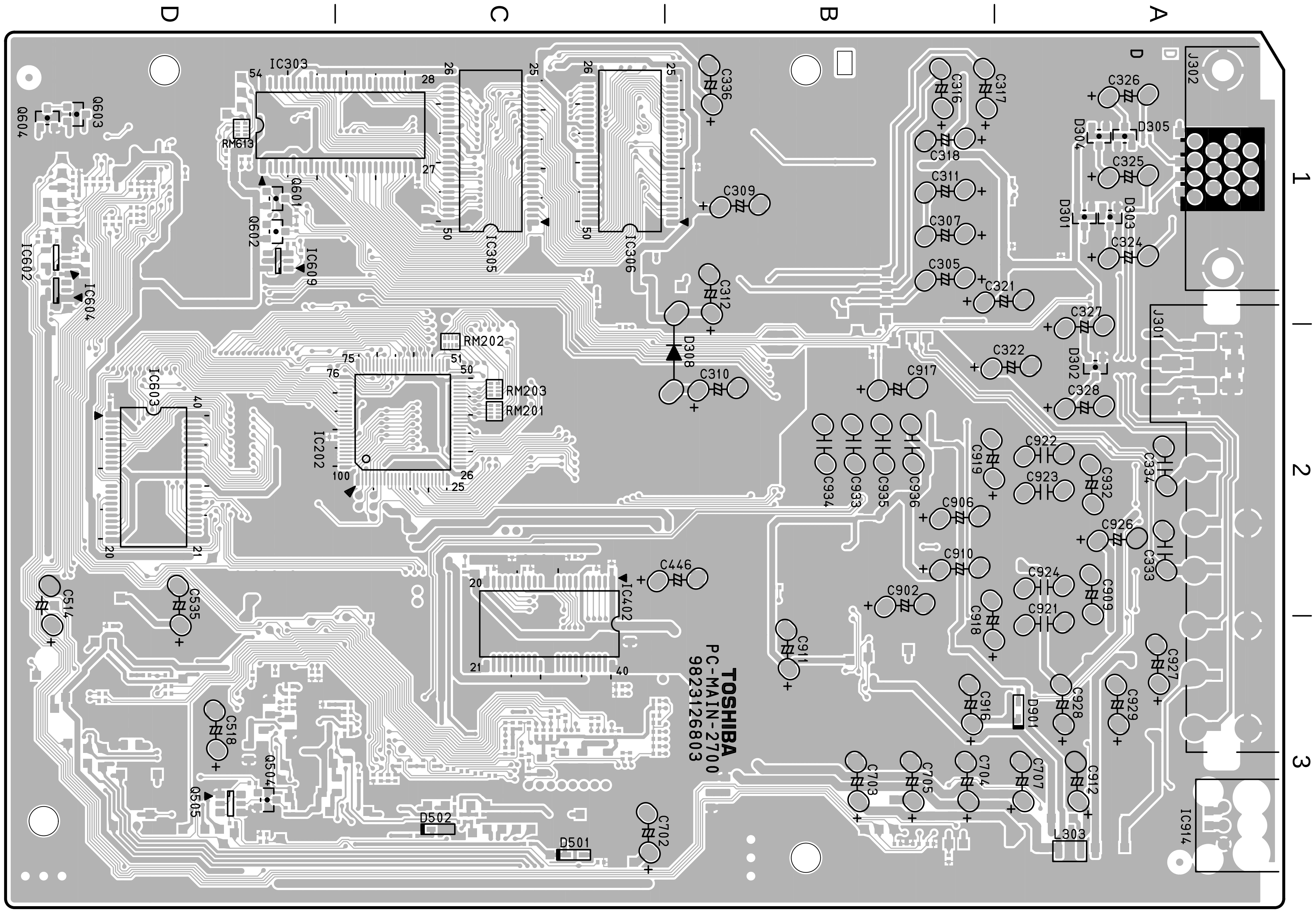
TP404
TP405
TP406
TP407
TP408
TP409
TP410
TP411
TP412
TP413
TP414
RM601
RM602
RM603
RM604
RM605
RM606
RM607
RM608
RM609
RM610
RM611
RM612
RM614

Fig. 3-6-8 EU01 Main PC Board (Top pattern, character/symbol)



D
C
B
A
1
2
3
IC303
IC305
IC306
IC202
IC603
IC602
IC604
IC609
IC402
IC914
Q601
Q602
Q603
Q604
Q504
Q505
RM613
RM202
RM203
RM201
J301
J302
D301
D302
D303
D304
D305
D308
D501
D502
D901
L303
C305
C307
C309
C310
C311
C312
C316
C317
C318
C321
C322
C324
C325
C326
C327
C328
C333
C334
C336
C446
C514
C518
C535
C702
C703
C704
C705
C707
C902
C906
C909
C910
C911
C912
C916
C917
C918
C919
C921
C922
C923
C924
C926
C927
C928
C929
C932
C933
C934
C935
C936
TOSHIBA
PC-MAIN-2700
9823126803

Fig. 3-6-9 EU01 Main PC Board (Bottom pattern, character/symbol)

6-5. Front Display PC Board

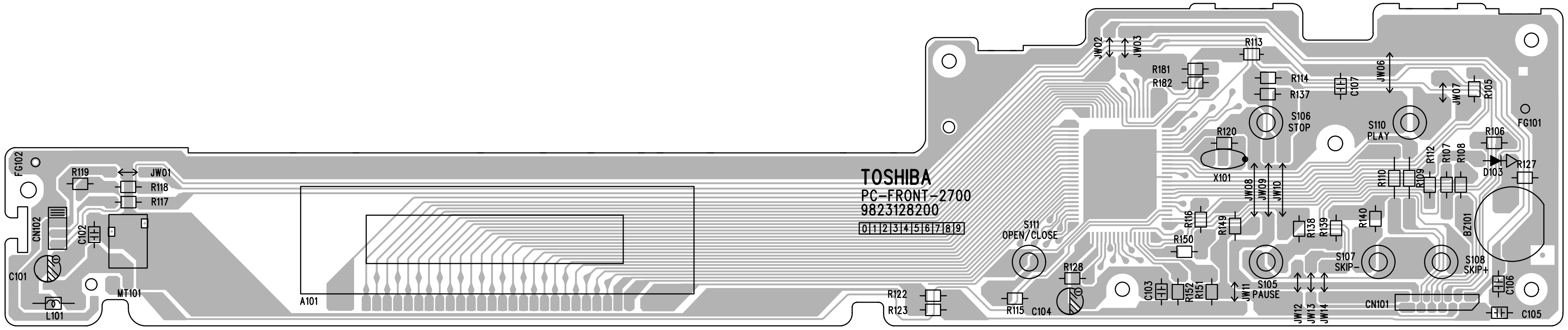

TOSHIBA
PC-FRONT-2700
9823128200
0 1 2 3 4 5 6 7 8 9
FG102
R119
JW01
R118
R117
CN102
C102
C101
L101
MT101
A101
R122
R123
R115
C104
S111
OPEN/CLOSE
R128
R150
R116
R149
JW02
JW03
R181
R182
R113
R114
R137
R120
X101
S106
STOP
C107
JW06
S110
PLAY
JW07
R105
FG101
R106
D103
R127
R110
R109
R112
R107
R108
BZ101
JW08
JW09
JW10
R138
R139
R140
C103
R152
R151
JW11
S105
PAUSE
S107
SKIP−
S108
SKIP+
C106
JW12
JW13
JW14
CN101
C105

Fig. 3-6-10 EU03 Front Display PC Board (Top Side)

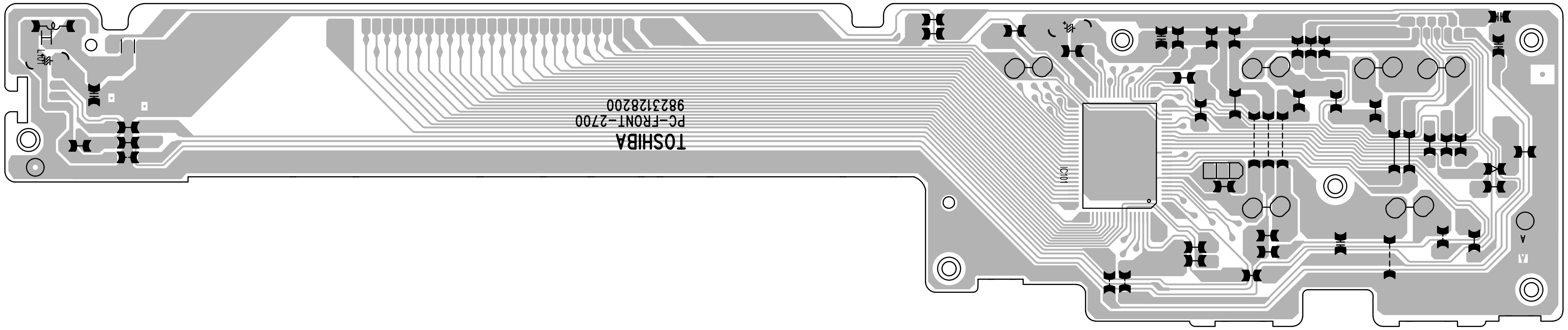

TOSHIBA
PC-FRONT-2700
9823128200
IC101
L101

Fig. 3-6-11 EU03 Front Display PC Board (Bottom Side)

The parts location list shows ex.
A1/B1= top side/bottom side.

Part No.	Loca-tion
A101	C3/ –
BZ101	B8/ –
C101	C1/ –
C102	C1/ –
C103	C7/ –
C104	C6/ –
C105	C9/ –
C106	C9/ –
C107	B8/ –
CN101	C8/ –
CN102	C1/ –
D103	B9/ –
FG101	B9/ –
FG102	B1/ –
IC101	– /E6
JW01	B2/ –
JW02	B6/ –
JW03	B6/ –
JW06	B8/ –
JW07	B8/ –
JW08	B7/ –
JW09	B7/ –
JW10	B7/ –
JW11	C7/ –
JW12	C8/ –
JW13	C8/ –
JW14	C8/ –
L101	C1/ D1
MT101	C2/ –
R105	B8/ –
R106	B9/ –
R107	B8/ –
R108	B8/ –
R109	B8/ –
R110	B8/ –
R112	B8/ –
R113	B7/ –
R114	B8/ –
R115	C6/ –
R116	B7/ –
R117	B2/ –
R118	B2/ –
R119	B1/ –
R120	B7/ –
R122	C6/ –
R123	C6/ –
R127	B9/ –
R128	C6/ –
R137	B8/ –
R138	B8/ –
R139	B8/ –
R140	B8/ –
R149	B7/ –
R150	C7/ –
R151	C7/ –
R152	C7/ –
R181	B7/ –
R182	B7/ –
S105	C7/ –
S106	B8/ –
S107	C8/ –
S108	C8/ –
S110	B8/ –
S111	B6/ –
X101	B7/ –

SECTION 4
PARTS LIST

SAFETY PRECAUTION

The parts identified by ! (⚠) mark are critical for safety. Replace only with part number specified.

The mounting position of replacement is to be identical with originals.

The substitute replacement parts which do not have the same safety characteristics as specified in the parts list may create shock, fire or other hazards.

NOTICE

The part number must be used when ordering parts in order to assist in processing, be sure to include the model number and description.

ABBREVIATIONS

1. Integrated Circuit (IC)

2. Capacitor (Cap)

- **Capacitance Tolerance (for Nominal Capacitance more than 10pF)**

Table 4-2-1

Symbol	**B**	**C**	**D**	**F**	**G**	**J**	**K**	**M**	**N**
Tolerance %	± 0.1	± 0.25	± 0.5	± 1	± 2	± 5	± 10	± 20	± 30

Symbol	**P**	**Q**	**T**	**U**	**V**	**W**	**X**	**Y**	**Z**
Tolerance %	+ 100 0	+ 30 – 10	+ 50 – 10	+ 75 – 10	+ 20 – 10	+ 100 – 10	+ 40 – 20	+ 150 – 10	+ 80 – 20

Ex. 10MF J = 10µF ± 5%

- **Capacitance Tolerance (for Nominal Capacitance 10pF or less)**

Table 4-2-2

Symbol	**B**	**C**	**D**	**F**	**G**
Tolerance pF	± 0.1	± 0.25	± 0.5	± 1	± 2

Ex. 10pF G = 10pF ± 2pF

3. Resistor (Res)

- **Resistance tolerance**

Table 4-3-1

Symbol	**B**	**C**	**D**	**F**	**G**	**J**	**K**	**M**
Tolerance %	± 0.1	± 0.25	± 0.5	± 1	± 2	± 5	± 10	± 20

Ex. 470ohm J = 470ohm ± 5%

4. EXPLODED VIEWS

4-1. Packing Assembly

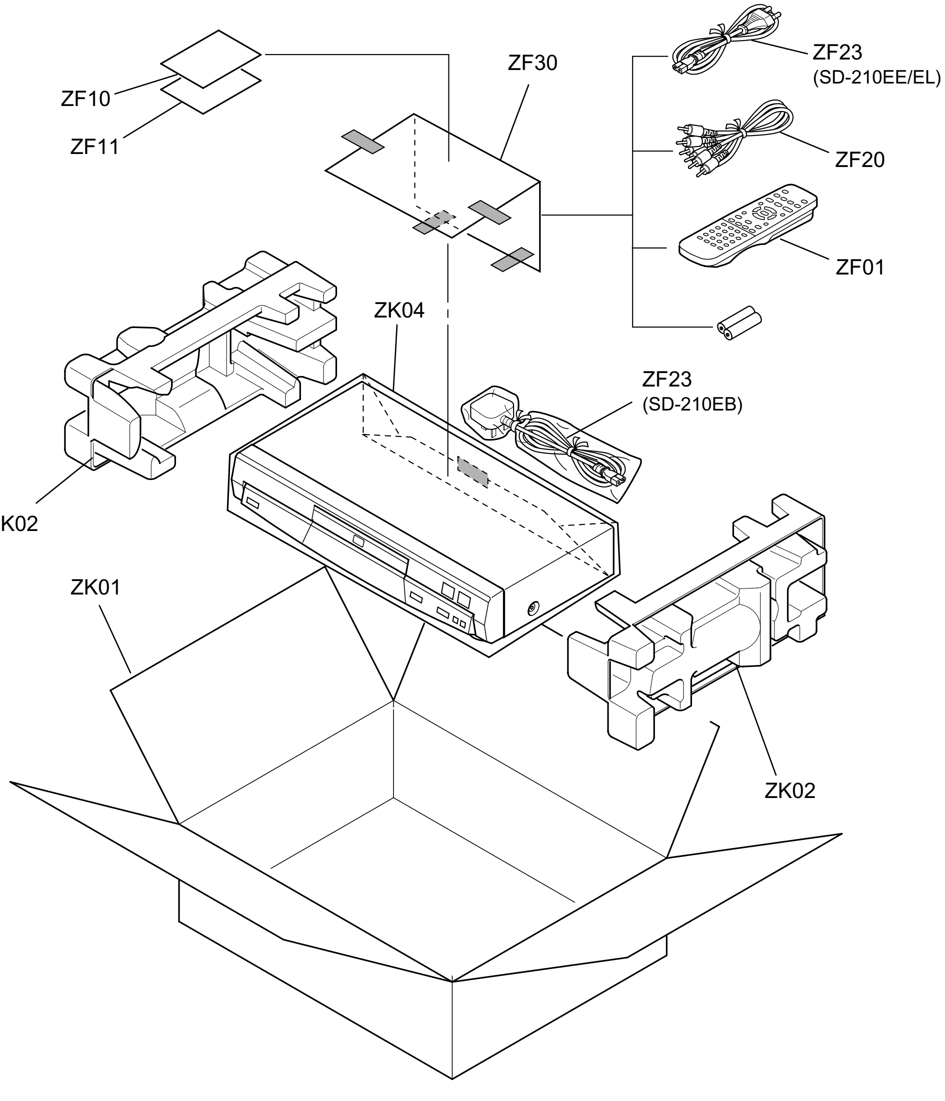

ZF10
ZF11
ZF30
ZF23
(SD-210EE/EL)
ZF20
ZF01
ZK04
ZF23
(SD-210EB)
ZK02
ZK01
ZK02

Fig. 4-4-1

4-2. Chassis Assembly

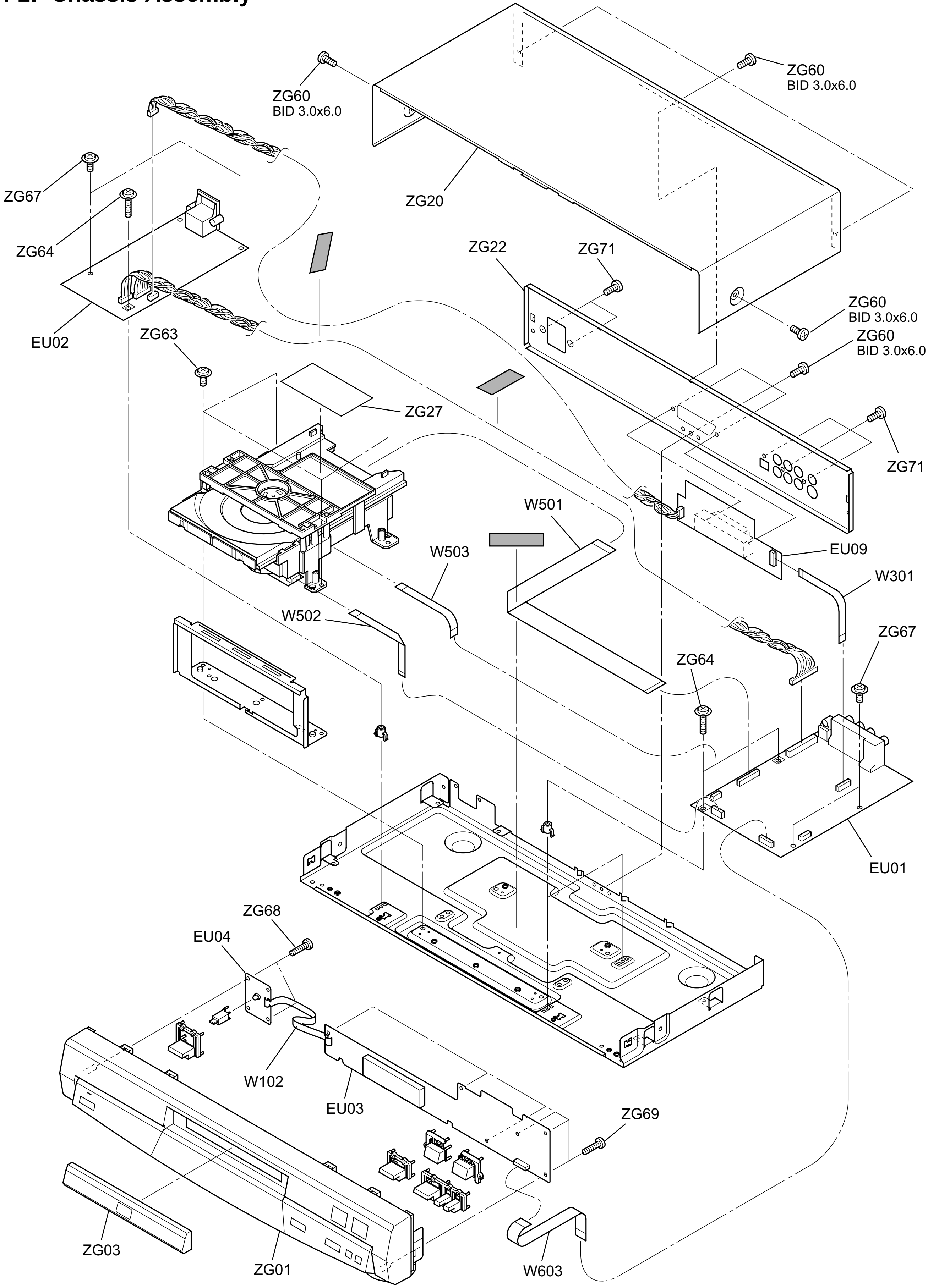
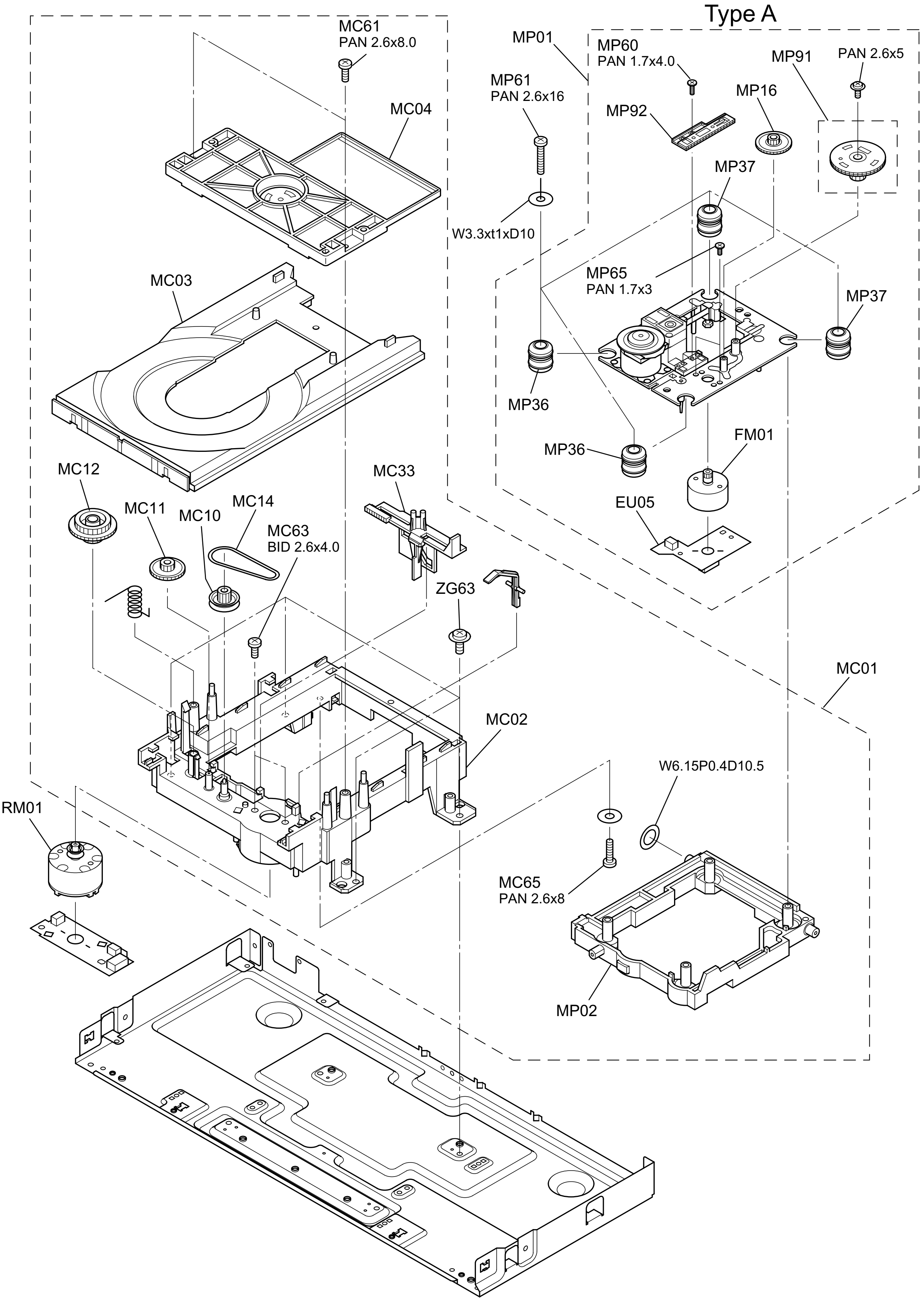

ZG60
BID 3.0x6.0
ZG60
BID 3.0x6.0
ZG67
ZG20
ZG64
ZG22
ZG71
EU02
ZG63
ZG60
BID 3.0x6.0
ZG60
BID 3.0x6.0
ZG27
ZG71
W501
W503
EU09
W301
W502
ZG67
ZG64
EU01
ZG68
EU04
W102
EU03
ZG69
ZG03
ZG01
W603

Fig. 4-4-2

4-3. Mechanism Assembly



Type A
MC61
PAN 2.6x8.0
MC04
MP01
MP60
PAN 1.7x4.0
MP91
PAN 2.6x5
MP61
PAN 2.6x16
MP92
MP16
MP37
W3.3xt1xD10
MC03
MP65
PAN 1.7x3
MP37
MP36
MP36
FM01
MC12
MC33
MC11
MC10
MC14
MC63
BID 2.6x4.0
EU05
ZG63
MC01
MC02
W6.15P0.4D10.5
RM01
MC65
PAN 2.6x8
MP02

Fig. 4-4-3

Mechanism Assembly (Type B)

Note:

The pickup mechanism assembly has two types, A and B of which shapes differ.

For the SD-210EB/EE/EL, only Type A is a service part. Type B can be changed to Type A pickup free from any performance problem.

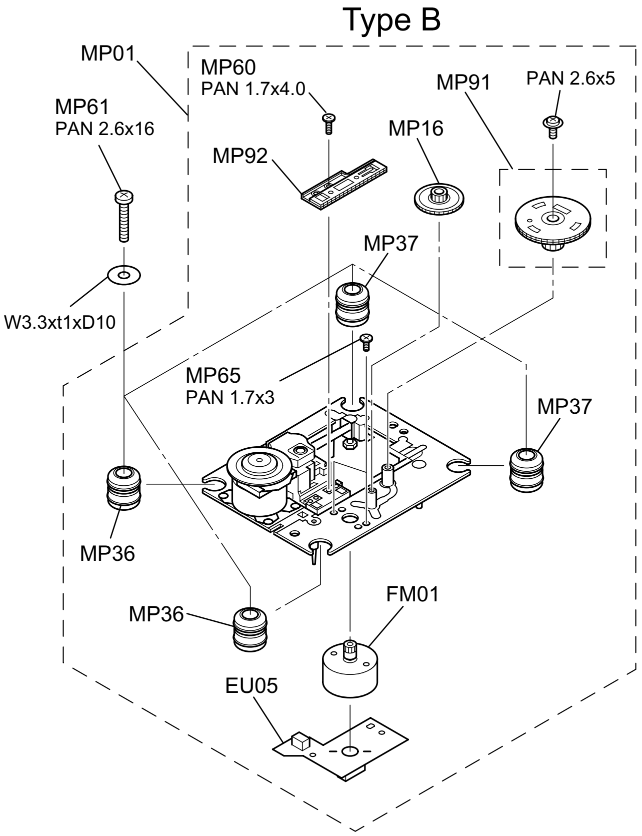

Type B
MP01
MP60
PAN 1.7x4.0
MP91
PAN 2.6x5
MP61
PAN 2.6x16
MP16
MP92
MP37
W3.3xt1xD10
MP65
PAN 1.7x3
MP37
MP36
FM01
MP36
EU05

Fig. 4-4-4

5.PARTS LIST

	LOCATION NUMBER	PART NUMBER	DESCRIPTION	
			- MECHANICAL PARTS -	
	FM01	79070421	Motor Assy,Feed	
	MC01	79070416	Chassis Assy,Mechanism	
	MC14	79070428	Belt,Loading	
!	MP01	79070470	Mechanism Assy,Pickup	
	MP16	79070422	Gear	
	MP36	79070458	Rubber,Dumper Kit	
	MP37	79070458	Rubber,Dumper Kit	
	MP60	79070020	Screw	1.7x4.0mm
	MP61	79079005	Screw	TZPAN2.6x15
	MP65	79079038	Screw	PAN1.7x3.0
	MP91	79070419	Gear Assy,Kit B	
	MP92	79070420	Gear Assy,Rack	
	RM01	79070427	Motor Assy,Loading	
	W301	79080278	Cable,Flexible	FFC,11P,L135
	W501	79080273	Cable,Flexible	FFC,23P,L297
	W502	79080192	Cable,Flexible	FFC,6P,L110
	W503	79080193	Cable,Flexible	FFC,8P,L85
	W603	79080190	Cable,Flexible	FFC,13P,L150
	ZF01	79078066	Remote Control Unit	SE-R0047
	ZF01	79078069	Remote Control Unit,	SE-R0049
!	ZF10	79077124	Owners Manual	English,SD-210EE/EL
!	ZF10	79077126	Owners Manual	English,SD-210EB
!	ZF11	79077123	Owners Manual	German/French,SD-210EE
!	ZF11	79077125	Owners Manual	Italian,SD-210EL
	ZF20	79070037	Cable,AV	
!	ZF23	79088008	Power Cord	SD-210EB
!	ZF23	79088010	Power Cord	SD-210EE/EL
	ZG01	79071189	Front Panel(Black)	SD-210EE
	ZG01	79071190	Front Panel(Silver)	SD-210EE/EB/EL
	ZG03	79071179	Panel,Tray(Black)	SD-210EE
	ZG03	79071188	Panel,Tray(Silver)	SD-210EE/EB/EL
	ZG20	79073087	Cover,Top(Black)	SD-210EE
	ZG20	79073091	Cover,Top(Silver)	SD-210EE/EB/EL
!	ZG27	79070469	Label,Caution	
	ZZ03	79080074	Kit,Data Update	

LOCATION NUMBER	PART NUMBER	DESCRIPTION		
		- ELECTRICAL PARTS -		
EU01	79083082	PC Board Assy	Main	
		- INTEGRATED CIRCUITS -		
IC201	79040145	IC	NN514800AJ-60T	
IC202	79040154	IC	TC203G08AF-0103Z	
IC301	79040326	IC	ZR36732	
IC302	79040244	IC	S-816A25AMC-BAA	
IC304	79040295	IC	MM1540AFBE	
IC305	79040163	IC	MT48LC1M16A1TG	
IC306	79040163	IC	MT48LC1M16A1TG	
IC401	79040282	IC	TC94A03F	
IC402	79040323	IC	M11B11664A-30T	
IC501	79040006	IC	TC7S04F	
IC502	79040296	IC	TA1323F	
IC503	79040324	IC	BA5813FM-E2	
IC601	79040226	IC	S-24C01BFJ-TB-0	
IC602	79040007	IC	TC7S08F	
IC603	79040323	IC	M11B11664A-30T	
IC604	79040248	IC	S-80145CLMC-J16	
IC605	79040322	IC	TMP94C251AF	
IC606	79040153	IC	MBM29F800BA55TN	
IC608	79040007	IC	TC7S08F	
IC609	79040007	IC	TC7S08F	
IC610	79040087	IC	TC7W241FU	
IC611	79040007	IC	TC7S08F	
IC901	79040328	IC	AD1959XRSRL	
IC903	79040249	IC	TC7SH08FU	
IC907	79040325	IC	S-814A50AUC-BD0	
IC912	79040044	IC	NJM4580E	
IC913	79040074	IC	TC74HCU04AF	
IC914	79089024	Terminal,Optical	TOTX178	
		- TRANSISTORS -		
Q301	79050079	Transistor,Chip	2SA1213-Y	
Q302	79050018	Transistor,Chip	2SA1162	
Q303	79050018	Transistor,Chip	2SA1162	
Q304	79050018	Transistor,Chip	2SA1162	
Q305	79050043	Transistor,Chip	RN1402	
Q306	79050018	Transistor,Chip	2SA1162	
Q307	79050018	Transistor,Chip	2SA1162	
Q308	79050043	Transistor,Chip	RN1402	
Q309	79050014	Transistor,Chip	HN1C03F	
Q401	79050085	Transistor,Chip	2SC3326-B	
Q501	79050015	Transistor,Chip	HN1B01F	
Q502	79050015	Transistor,Chip	HN1B01F	
Q503	79050079	Transistor,Chip	2SA1213-Y	
Q504	79050043	Transistor,Chip	RN1402	
Q505	79050014	Transistor,Chip	HN1C03F	
Q601	79050031	Transistor,Chip	DTA114EKA	
Q602	79050031	Transistor,Chip	DTA114EKA	
Q901	79050001	Transistor,Chip	RN2402	
Q902	79050016	Transistor,Chip	2SC2712	
Q903	79050001	Transistor,Chip	RN2402	
Q904	79050001	Transistor,Chip	RN2402	
Q905	79050001	Transistor,Chip	RN2402	
Q906	79050001	Transistor,Chip	RN2402	
Q909	79050016	Transistor,Chip	2SC2712	
Q910	79050014	Transistor,Chip	HN1C03F	
Q911	79050014	Transistor,Chip	HN1C03F	
Q912	79050012	Transistor,Chip	RN4601	
Q913	79050018	Transistor,Chip	2SA1162	
Q914	79050043	Transistor,Chip	RN1402	
		- DIODES -		
D301	79060028	Diode,Chip	1SS226	
D302	79060028	Diode,Chip	1SS226	
D303	79060028	Diode,Chip	1SS226	
D304	79060028	Diode,Chip	1SS226	
D305	79060028	Diode,Chip	1SS226	
D308	79060012	Diode	ERA15-02	
D501	79060022	Diode,Chip	1SS368	
D502	79060022	Diode,Chip	1SS368	
D901	79060022	Diode,Chip	1SS368	
		- MISCELLANEOUS -		
J301	79089094	Plate,Jack		
X601	79089022	Oscillator,Ceramic	9.00MHz	
X901	79089121	Oscillator,Crystal	27MHz	
! EU02	79085080	PC Board Assy	Power	
		- INTEGRATED CIRCUITS -		
! Q802	79040327	IC	TA1319AP	
Q821	79040146	IC	TA76431S	
		- TRANSISTORS -		
! Q801	79050095	Transistor	FS5KM-16A	
! Q803	79050044	Photo Coupler	TLP621	
! Q804	79050044	Photo Coupler	TLP621	
Q823	79050076	Transistor	2SA1585STP-Q	
Q824	79050077	Transistor	2SC1740STP-Q	
Q825	79050005	Transistor	2SC2236-Y	
Q826	79050005	Transistor	2SC2236-Y	
Q827	79050077	Transistor	2SC1740STP-Q	
Q828	79050076	Transistor	2SA1585STP-Q	
Q829	79050040	Transistor	2SA1048-Y	
Q830	79050008	Transistor	RN1201	
		- DIODES -		
! D803	79060087	Diode	S1WB(A)60	
D805	79060009	Diode	RU-1P	
D806	79060013	Diode	AG01	
D807	79060080	Diode	AK06	
D808	79060088	Diode,Zener	MTZJ-30B	
D821	79060071	Diode	HER152G	
D822	79060017	Diode	RU4Z	
D823	79060089	Diode	HT16G	
D824	79060013	Diode	AG01	
D825	79060013	Diode	AG01	
D826	79060012	Diode	ERA15-02	
D827	79060012	Diode	ERA15-02	
D828	79060012	Diode	ERA15-02	
D829	79060012	Diode	ERA15-02	
D830	79060015	Diode	1SS133	
D831	79060007	Diode,Zener	UZ3.0BSB	
D832	79060034	Diode,Zener	MTZJT-77-10B	
D833	79060034	Diode,Zener	MTZJT-77-10B	
D834	79060068	Diode,Zener	MTZJT-77-8.2B	
D835	79060004	Diode,Zener	UZ5.1BSB	
D836	79060005	Diode,Zener	UZ11BSB	
D837	79060005	Diode,Zener	UZ11BSB	
D838	79060012	Diode	ERA15-02	
D839	79060012	Diode	ERA15-02	
		- CAPACITORS -		
! C801	79020196	Cap,Film	0.22MF	M 275V
! C802	79020198	Cap,Film	10000pF	M 275V
! C803	79020028	Cap,Ceramic	470pF	Z 250V
! C804	79020028	Cap,Ceramic	470pF	Z 250V
! C811	79020193	Cap,Ceramic	220pF	K 250V
		- RESISTORS -		
! R801	79030055	Res,Oxide Metal	1Mohm	J 1/2W
		- MISCELLANEOUS -		
! F801	79087012	Fuse	1.6A,250V	
! P802	79089029	Jack	AC Inlet	
! RF835	79030015	Res,Fusible	2.2ohm	J 1/4W
! T801	79080006	Line Filter	253YOR7	
! T802	79010026	Power Transformer	SRW3020ED5-210	
EU03	--------	PC Board Assy	Front	
		- INTEGRATED CIRCUITS -		
IC101	79040321	IC	TMP87CH74AF-2C07	
		- MISCELLANEOUS -		
A101	79089126	Display,FL	8-BT-224GNK	
MT101	79080140	Module,RMT	GP1U261X	
S105	79089020	Switch	Push	
S106	79089020	Switch	Push	
S107	79089020	Switch	Push	
S108	79089020	Switch	Push	
S110	79089020	Switch	Push	
S111	79089020	Switch	Push	
X101	79089095	Oscillator,Ceramic	8MHz	
EU04	--------	PC Board Assy	Power Switch	
		- TRANSISTORS -		
Q141	79050086	Transistor,Chip	RN2202	
Q142	79050086	Transistor,Chip	RN2202	
		- DIODES -		
D141	79060033	Diode,LED		
		- MISCELLANEOUS -		
S141	79089020	Switch	Push	
EU09	--------	PC Board Assy	Output-RGB	
		- INTEGRATED CIRCUITS -		
ICV01	79040295	IC	MM1540AFBE	
ICV02	79040029	IC	TC74HC4053AF	
		- TRANSISTORS -		
QV01	79050018	Transistor,Chip	2SA1162	

LOCATION NUMBER	PART NUMBER	DESCRIPTION	
QV02	79050078	Transistor,Chip	DTC114EKA-T
QV03	79050078	Transistor,Chip	DTC114EKA-T
QV04	79050078	Transistor,Chip	DTC114EKA-T
QV05	79050031	Transistor,Chip	DTA114EKA
QV06	79050078	Transistor,Chip	DTC114EKA-T
QV07	79050016	Transistor,Chip	2SC2712
QV08	79050016	Transistor,Chip	2SC2712
QV09	79050016	Transistor,Chip	2SC2712
QV10	79050016	Transistor,Chip	2SC2712
QV11	79050016	Transistor,Chip	2SC2712
		- DIODES -	
DV01	79060028	Diode,Chip	1SS226
DV02	79060028	Diode,Chip	1SS226
DV03	79060028	Diode,Chip	1SS226
DVO4	79060028	Diode,Chip	1SS226
		- MISCELLANEOUS -	
JV01	79089145	Jack,Scart	

LOCATION NUMBER	PART NUMBER	DESCRIPTION

TOSHIBA CORPORATION
1–1, SHIBAURA 1– CHOME, MINATO – KU, TOKYO 105 – 8001, JAPAN